WPP 001/4 PER 10,0c 1. Edition

PES 8 MW 100/720 RS 1019 0 403 448 106

ROV 500-1200 MW 29

companyerkins engine TV 8.640 6R

185 kW (252 PS)

1 - 8 - 7 - 5 - 4 - 3 - 6 - 2

 $0 - 45 - 90 - 135 - 180 - 225 - 270 - 315 \pm 0.05(0.75)$ 

+ Port-closing mark on rear side

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel injection Pump Settings

Port closing at pres	strok <b>e</b>	3,00-3,10 -(2,95-3,15)	mm (from BDC)	RW 9.0-12.0 mm						
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Oifference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6				
1180	12,2+0,1	9,9 - 10,1	0,35(0,6)							
500	5,8-6,0	0,95 - 1,35	0,35(0,55	)						
800	12,2+0,1		0,5 (0,7)							
			. <b></b>	l	1	1 .				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	speed	•	Intermediate	rated sp	eed	Lower rated	speed		Clidina e	leeve travel
	rev/min Control rod travel	Control rod talent	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel	Siturity s	1
lever	mm	rev/min (28)	lever	rev/min	mm (4)	lever	tev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 14	500	5,8-6,0		
	1400	0,1-1,0					100	min.7,5		
ca.64	11,2	1220-1225					660-7	20 = 2,0		
	4,0	1255-1260				<b>③</b>				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		Rotational-speed 2b fimitation intermediate speed	Fuel deli- high idle s	very characteristics (5e poed (5b)	Starting Idle switching	. •	Torque- travel	control 5
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1180	99,0-101,0	1220 - 1225+	800	93,0-97,0	100	19,0-21,0RW		
	(97,0-103,0)			(91,0-99,0)		min.140,0		
		·						
							ļ	

Checking values in brackets

\* 1 mm less control rod travel then col. 2

8.84

AA

### Port closing and TDC markings

Comb. - No. . . . 106

\*camshaft between port closing and TDC at control-rod travel 10,5 mm 15°

AL

0

# Test Specifications Fuel Injection Pumps (1)PP 001/4 VOL 4,5 e and Governors 1. Edition

estoil-150 4113

PES 4 MW 100/320 RS 1102 0 403 444 107

RQV 300-1100 MW 39-5

supersedes companyolvo engine D 45 85 kW

1-3 - 4 - 2 0-90-180-270 + 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings 2,80-2,90

Rotational speed	1	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm³/ 100 strokes	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
700	12,1+0,1	11,3-115	0,35(0,6)	2	3	6
300	5,8-5,9	1,3-1,7	0,35(0,55	)		
1000	12,1+0,1		0,55(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	speed		Intermediat	e rated sp	eed	Lower rated	speed		Sliding	leeve travel
deflection	rev/min Control rod travel mm 2	(Lave)	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	0
max.	1200 1350	15,2-17,8 0 - 1,0	3			ca.10	300	5,6-5,7 min. 8,1		<u></u>
	11,1 4,0	1140-1150 1210-1240					320-0	550		
						<b>3</b>				

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil te		Rotational-speed 2b limitation intermediate speed	Fuel deli- high idle :		Starting idle switchir		Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
700	113,0-115,0 (111,0-117,0)	1140-1150*	1000	112,0-116,0 (110,0-118,0	300	mm RW 130,0-140,0 (127,0-143,0		•

Checking values in brackets

<sup>\* 1</sup> mm less control rod travel than col. 2

WPP 001/4 VOL 4,5 g

1. Edition

En

Testoil-ISO 4113

PES 4 MW 100/320 RS 1102 RSV 300-1000 MW 1 A 315

0 403 474 001

supersedes Volvo

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
2,80-2,90
Port closing at prestroke (2,75-2,95) mm

mm (from BDC) bei RW=9,0-12,0 mm

que control valve)	Spring p	Fuel delivery	Control ros	Difference	Fuel delivery	Rotational Control rod travel	
	mm 6	cm <sup>1</sup> /100 strokes	mm 2	cm <sup>1</sup> / 100 strokes 4	cm/100 strokes 3	mm 2	rev/min 1
<del></del>				0,35(0,6)	11,3-11,5	12,1+0,1	700
		· · · · · · · · · · · · · · · · · · ·		0,35(0,55)	1,3-1,7	5,6-5,7	300
				0,55(0,7)	i	12,1+0,1	1000
			1	1	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		1000

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	er rated speed		Intermediate rated speed			Lower rated speed			3 Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm	rev/min	Control rod travel mm	
loose	800	0,3-1,0		<del>. • • • • • • • • • • • • • • • • • • •</del>	<del></del>	ca.12	300	5,1-5,2			
							300	5,6-5,7			
ca.52	11,1 4,0 0,3-1,	1040-1050 1055-1085 7 1200					360-42	<b>y=</b> 2,U			

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

9	ill-load stop emp 40°C (104°F)	Rotational-speed limitat  Solve   Gallery   Ga			Starting I	fuel delivery 5	1dle stop	
rev/min	cm /1000 strokes	changed to ) rev/min 3	rev/min 4	cm //1000 strokes	rev/min	cm³/1000 strokes 7	rev/min	Control rod travel mm
700	113,0-115,0 (111,0-117,0)	1040-1050*	1000	112,0-116,0 (110,0-118,0)	300	13,0-17, (10,5-19,	0 300 5)	5,6-5,
				: :				

Checking values in brackets

\* 1 mm less control rod travel than cot 2

### $\odot$

# Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 KHD 13,4 a

1. Edition

engine: BF 8 L 513

222 kW

supersedeg

company:KHD

En.

PE 8 MW 100/720 LS 1118 RQV 300-1150 MW 56

0 403 548 007

1- 8- 7- 2 - 6 - 5 - 4 - 3

 $0-45-90-135-180-225-270-315 \pm 0,50 (0,75)$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6_
700	12,5+0,1	13,3-13,5	0,35(0,6)			
300	6,7-6,8	1,6-2,0	0,35(0,55			
1150	11,9+0,1		0,5 (0,7)			
450	11,4+0,1					

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated :	speed			Intermediate	rated sp	eed	Lower rated	speed	•	Slidina s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod travel mm rev/min	(19) (29)	Degree of deffection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	(1) mm
max.	1175 1400	15,2-17, 0-1	8				ca. 18	300	6,7-6,8		
ca. 55		1190-120 1270-130						320-4	60		
							<b>③</b>				

Torque control travel a = 0,6 mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil te	felivery id stop mp. 40°C (104°F) 2	Rotational-speed 20 limitation intermediate speed			Starting Idle switchis	. •	Torque-control 5 travel  Control rod		
rev/min 1	cm <sup>3</sup> /1000 atrokes	rev/min 49 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9	
LDA 700	0,8 bar 133,0-135,0 (131,0-137,0)	1190-1200*	LDA 1150 LDA 450	0,8 bar 129,0-131,0 (126,0-134,0) 0 bar 104,0-106,0 (102,0-108,0)		19,0-21,0 mm RW 140-150	750	11,9+0, 12,5+0, 12,1+0,	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

8.84

AO

## D. Adjustment Test for Manifold Pressure Compensator

KHD 13,4 a -2-

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
Pump LS 1118 with MW 56	0,8	0,36 0,26 0	12,5-12,6 12,2-12,3 11,6-11,7 11,4-11,5

Notes

Testoil-ISO 4113

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 MB 11.8 e

7. Edition

PE 6 P 100 A 720 RS 15

Komb.-Nr. 0 401 846 329 (1)

RQ 250/1100 PA 269 R

PA 278 R\* (2)

supersedes 3.83 company: Daimler-Benz

OM 355

\* 278 R -

Functional check of roll-start block: Adjust solenoid until control rod is 1;5-2,5 mm from Stop.
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

0 401 846 331 (2)

Port closing at prestroke

2.80-2.90

mm (from BDG RW 9,0-12.0 mm

Rotational speed rev/min	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,0+0,1	11,9-12,1	0,3(0,6)			
250	7,4-7,6	1,7-2,3	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Checkin	g of slider	Full-load	•	•	cifications (4)	Idle spec	•		cifications (5)	Torque (	control 3
	Control rod	rev/min 3	Control red travel mm	Central red travel mm 5	rev/min	rev/min 7	Control red travel	rev/min 9	Control rod travel	rev/min	Control rod travel
600	15,6-16,4	600	16,0	12,0 4,0 1350	1125-1145 1195-1230 0-1,5	250	5,0	250	min.7,0 5,9-6,1 425 = 2,0	-	•
Torque-c	ontrol travel				<u></u>		11	25-11	45 min <sup>-1</sup>		1 mm less contr

Torque-control travel on flyweight assembly dimension a =

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	rury characteristics 3b	Starting lidle spec	fuel delivery
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /~1000 strokes 5	rav/min	cm <sup>3</sup> /1000 strokes:/ mm 7
1100	118,5-120,5 (116,5-122,5)	450	450	101,0-105,0 (99,0-107,0)	100	140,0-160,0 (136,0-164,0)

Checking values in brackets

40

WPP 001/4 KHD 36,6 a

1. Edition

PE 8 P 100/900/5 RS 114 (1)
PE 8 P 100/900/5 RS 115 (2)
PE 8 P 100/920/5 RS 115 RSUV 300-750 P 9/322 R (3)
Cam sequence and angular cam spacing, Instructions 2
Note VDT-I-401/103

Supersedes KHD
company
F 16 M 716
Komb.-Name 0 401 818 006 (1)
0 401 818 008 (2)
0 401 878 033 (3)

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(1) (1) 2.0-2,1 (1,95-2,15)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque-control valve)
rev/min	mm 2	cm <sup>1/1</sup> 00 strokes	cm <sup>-/</sup> 100 strokes 4	mm 2	cm/100 strokes	mm 6
1000	12,0	12,4-13,2	0,5			
600 600 600	9,0 12,0 15,0	5,4-6,4 11,4-12,7 17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	Control rod travel mm	rev/min Control rod travel mm rev/min	Intern 4	nediate rat	ed speed	Control- lever dellection in degrees 7	Low rev/min 8	er rated speed   Control rod   travel   mm   9	3 To	Control rod travel mm
ca.68	750 770 800	16,0 12,5 6,2	with	nout a	uxoliaı	ca. 31 ry spring	300 60 300	8,0 19-21 7,7-8,3	730 400 320	0 0 1,2-1,8
29	785 800 820	7,4-10,4 4,8-7,8 1,8-4,8	with	auxi	liary :	spring	350 470	4,6-6,2		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) fu	it load stop	6 Rotational- speed limitat		iel delivery laracteristics	Starting t	fuel delivery 5	4a Idle stop	
_	emp 40°C (104°F) cm*/1000 strokes	Note changed to ) rev/min	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	cm //1000 strokes	rev/min	Control root travel mm
Pumps Take	run in tandem ull-load delive	ry from VDT	-1-401	/103	-	-	•	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

**BOSCH** 

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Cam sequence and angular cam spacing.

PE 8 P..RS 114:

1- 8- 4- 7- 3 - 6 - 5 - 2 0-30-75-90-135-165-225-300° ± 0,5° (± 0,75°)

PE 8 P..RS 115:

1- 5- 4- 3 - 8 - 7 - 2 - 6 0-45-75-135-210-270-300-345° ± 0,5° (± 0,75°)

40

WPP 001/4 KHD 36.6 a 1

1. Edition

E

PE 8 P 100 A 900/5 RS 114 (1) PE 8 P 100 A 920/5 RS 115 RSUV 300-750 P 9/322 R (2)

supersedr KHD company F 16 M 716

Cam sequence and angular cam spacing, Instructions 2 Note VDT-I-401/ 103

engine
Komb.-Nr. 0 401 818 011 (1)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

0 401 878 046 (2)

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1,95-2,1

mm (from BDC)

		(1,33-2,13)				
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm·/100 strokes	cm <sup>-/</sup> 100 strokes	mm	cm //100 strokes	mm
1	2	3	4	2	3	6
1000	12,0	12,4-13,2	0,5			
600 600	9,0 12,0	5,4-6,4 11,4-12,7				
600 200	15.0 9.0	17,5-18,8 3,6-4,6				

Artjust the fuel delivery from each outlet according to the values in E

#### **B. Governor Settings**

Degree of deflection of control lever	er rated speed Control rod travel mm	Control rod travel mm rev/min	Interme	diate rate	d speed	Control- tever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	3 To	rque control Control rod travel mm
ca.68	750 770 800	16,0 12,5 6,2	with	out a	uxolia	ca. 31 ry sprin	300 9 60 300	8,0 19-21	730 400 320	0 0 1,2-1,8
29	785 800 820	7,4-10,4 4,8-7,8 1,8-4,8	with	auxi	liary	spring	350 350 470	7,7-8,3 4,6-6,2 0		

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

<b>W</b>	emp 40°C (104°F)	6 Rotational speed limital		uel delivery haracteristics	Starting fidle	luel delivery 5	<b>49</b> ld	e stop
rev/min	cm/1000 strokes	Note changed to ) rev/min 3	rev/min	cm <sup>-/</sup> /1000 strokes 5	rev/min 6	cm <sup>1</sup> /1000 strokes 7	rev/min 8	Control root travel mm
	run in tandem full-load deli		-1-40	/103	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

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#### Cam sequence and angular cam spacing.

PE 8 P..RS 114:

1- 8- 4- 7- 3 - 6 - 5 - 2 0-30-75-90-135-165-225-300° ± 0,5° (± 0,75°)

PE 8 P..RS 115:

1- 5- 4- 3 - 8 - 7 - 2 - 6 0-45-75-135-210-270-300-345° ± 0,5° (± 0,75°)

40

WPP 001/4 KHD 36,6 a 3

1. Edition

En

PE 8 P 110 A 900/5 RS 114 (1)
PE 8 P 110 A 920/5 RS 115 RSUV 300-750 P 9 A 322 R (2)

supersede KHD

Values only apply to test nozzle-and-holder

company F 16 M 716

assembly 0 681 443 022 and fuel-injection test tubing 1 680 750 060

Komb.-NP:0 401 818 012 (1) 0 401 878 077 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(1,95-2,15)

Cam sequence and angular cam spacing, Instructions 2

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (forque-control valve)
rev/min 1	mm 2	cm/100 strokes	cm <sup>-/</sup> 100 strokes 4	mm 2	cm //100 strokes	mm 6
1000	12,0	18,8-19,6	0,8			
600 600 600 200	6,0 12,0 15,0 6,0	3,4-4,4 18,2-19,5 26,7-28,4 0,9-1,9				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	er rated speed Control rod travel mm	t rev/min  Control rod  travel  mm rev/min  3	Interme	ediate rate	d speed	Control- lever deflection in degrees 7	Lowe rev/min 8	Control rod travel mm	3 ro	Control rod travel mm
ca.68	750 770 800	16,0 12,5 6,2	with	out au		ca. 31 y spring		8,0 19-21	730 400 320	0 0 1,2-1,8
29	785 800 820	7,4-10,4 4,8-7,8 1,8-4,8	with	auxil	iary s	pring	300 350 400	7,7-8,3 1,4-4,2 0-1,0		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

<b>U</b>	ull-load stop emp 40°C (104°F)	Rotational- speed limitat								
	cm /1000 strokes	changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes	rev/min 6	cm <sup>9</sup> /1000 strakes 7	rev/min 8	Control rod travel mm		
	s run in tanden : full-load deli		DT-1-4	01/103	-	-	-	-		

Checking values in brackets

\* 1 mm less control rod travel than cot 2

6.84

BOSCH

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912

tam sequence and angular spacing:

PE 8 P..RS 114:

1-8-4-7-3-6-5-2 $0-30-75-90-135-165-225-300^{\circ} \pm 0,5^{\circ} (\pm 0,75)$ 

PE 8 P..RS 115:

1- 5- 4- 3 - 8 - 7 - 2 - 6  $0-45-75-135-210-270-300-345^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

Note VDT-I-401/103!

WPP 001/4 KHD 36,6 a 4

1. Edition

PE 8 P 110 A 920/5 RS 115 RSUV 300-750 P 9/322 R

supersede :-

 $0-45-75-135-210-270-300-345^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

company KHD engine F 16 M 716

Values only apply to test nozzle-and-holder assembly 0 681 443 022 and fuel-injection test tub ing 1 680 750 060
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Komb.-Nr. 0 401 878 080

Note VDT-I-401/ 103

A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1.95-2.15)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque control valve)
rev/min	mm (2)	cm*/100 strokes	cm <sup>-/</sup> 100 strokes	mm	cm 1/100 strokes	mm
1	2	3	4	2	3	6
1000	12,0	18,4-19,6	0,8			
600 600 600 200	6,0 12,0 15,0 6,0	3,4-4,4 18,2-19,5 26,7-28,4 0,9-1,9				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	er rated speed		Interm	ediale rate	ed speed	(4)	Low	er rated speed	rated speed (3) To	
Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
ca.68	750 770 800	16,0 12,5 6,2	wit			ca. 31 ry sprin	F ••	8,0 19-21	730 400 320	0 0 1,2-1,8
29	785 800 820	7,4-10,4 4,8-7,8 1,8-4,8	<b>.</b>	h auxi	liary	spring	300 350 400	7,7-8,3 1,4-4,2 0-1,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	Rotational speed limitat	39 F	uel delivery naracteristics	Starting t	uel delivery 5	<b>49</b> lq	e stop
rev/min	emp 40°C (104°F) cm <sup>1/</sup> 1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm*/1000 strokes 5	rev/min 6	cm <sup>1</sup> /1000 strokes 7	rev/min 8	Control ro- travel mm
'ump r ake f	uns in tandem w ull-load delive	ith PE 8 P 1 ry from VDT-	00/90 I-401	0/5 RS 114 - 0 4 /103	- 101 818	- 3 012	-	-

Checking values in brackets

\* 1 mm less control rod travel than cot 2

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6.84

A14

40

WPP 001/4 KHD 36,6 b

16 M 716

1. Edition

En

PE 8 P 100/920/5 RS 115 RSUV 300-900 PO/327R

Komb.-Nr. 0 401 878 036 company
1- 5- 4- 3 - 8 - 7 - 2 - 6
0-45-75-135-210-270-300-345° ± 0,5° (± 0,75°)
Note VDT-I-401/103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1,95-2,15)

mm (from BDC;

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm/100 strokes 3	Difference cm '/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600 600 600 200	9,0 12,0 15,0 9,0	5,4-6,4 11,4-12,7 17,5-18,8 3,6-4,6	·			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Uppe Degree of deflection of control lever	r rated speed Control rod travel mm		Interm	ediate rate	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	3 To	rque control   Control rod travel   mm
ca. 65	900 930 950	16,0 10,5 6,0	with	out au	xoliar	ca. 23 y sprinc	300 70	8,0 19-21	880 500 330	0 0 1,2-1,8
29	930 960 <b>105</b> 0	9,5-12,0 4,2-6,7 0-1,0	with	auxil	iary s	pring	300 350 440	7,7-8,3 3,5-5,5 0-1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill load stop	6 Rotational- speed limitat	38 F.L	iel delivery paracteristics	Starting fuel delivery 5		<b>43</b> Id	e stop
rev/min	emp 40°C (104°F) cm*/1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm/1000 strokes 5	rev/min 6	cm <sup>1</sup> /1000 strokes	rev/min	Control rod travel mm
Pump Take	runs in tandem full-load deli	with PE 8 P very from VD	100/9 T-1-40	00/5 RS 114 - 0 11/103	- 401 8	18 006	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.84

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung.
1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Atlemagne par Robert Bosch GmbH.

WPP 001/4 KHD 36,6 b 1

1. Edition

PE 8 P 100 A 920/5 RS 115 Komb.-Nr. 0 401 878 047 1-5-4-3-8-7-2-6

RSUV 300-900 P0/327R

supersedes = **KHD** company

engine

F 16 M 716

 $0-45-75-135-210-270-300-345^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings 2,0-2,1

Port closing at prestroke

(1,95-2,15)

mm (from BDC)

Rotational speed rev/min	Control rod travel	Fuel delivery cm <sup>7</sup> /100 strokes	Difference cm <sup>-y</sup> 100 strokes	Control rod travel	Fuel delivery cm*/100 strokes	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	6
1000	12,0	12,4-13,2	0,5			
600 600 600 200	9,0 12,0 15,0 9,0	5,4-6,4 11,4-12,7 17,5-18,8 3,6-4,6				

Argust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

(1) Uppe	er rated speed		Interm	ediate rat	led speed	(4)	Lowe	er rated speed	(3) to	orque control
Degree of deflection of control lever	Control rod travel mm	travel mm rev/min	4	5	6	Control lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
ca. 65	900 930 950	16,0 10,5 6,0	with	without auxoliar			300 70	8,0 19-21	880 500 330	0 0 1,2-1,8
29		9,5-12,0 4,2-6,7 0-1,0	with	auxi	liary s	pring	300 350 440	7,7-8,3 3,5-5,5 0-1,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>C</b>	ull-load stop	6 Rotational- speed limitat		el delivery aracteristics	Starting (	luel delivery 5	<b>4a</b> Id	e stop
rest on to	emp 40°C (104°F) cm //1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm //1000 strokes	rev/min	cm³/1000 strokes	rev/min 8	Control rod travel mm
<sup>p</sup> ump r Take f	uns in tandem w ull-load delive	ith PE 8 P ry from VDT	00/90 1-401	D/5 RS 114 - 0 4 /103	- 01 81	- 3 011	•	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2



WPP 001/4 KHD 36,6 c

F 16 M 716

1. Edition

PE 8 P 100/920/5 RS 115 Komb.-Nr. 0 401 878 041

RSUV 300-600 P 8/322 R

supersedes KHD

1-5-4-3-8-7-2-6 0-45-75-135-210-270-300-345° ± 0,5° (± 0,75°)

engine

Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1.95-2.15)

mm (from BDC)

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque-control valve)
rev/min	mm <b>(2)</b>	cm1/100 strokes	cm <sup>-</sup> / 100 strokes	mm	cm // 100 strokes	mm
1	2	3	4	2	3	6
1000	12,0	12,4-13,2	0,5			
600 600 600	9,0 12,0 15,0	5,4-6,4 11,4-12,7 17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of	r rated speed Control rod travel		Interm	iediate rai	led speed	4 Control	Low	er rated speed Control rod	3 to	rque control Control rod
deflection of control fever 1	mm 2	mm rev/min	4	5	6	lever deflection in degrees 7	rev/min 8	mm 9	rev/min	iravel mm 11
ca. 68	600 620	16,0		1		ca. 34	300	8,0	580 350	0
	635	10,4 6,0	with	nout a	uxo1 ia:	y spring	T 60	19-21	320	1,2-1,8
29	620 650 690	9,0-10,6 2,0-4,8 0-1,0	with	ı auxi	liary s	pring	300 320 360	7,7-8,3 4,5-6,3 0-1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp 40°C (104°F)	Rotational- speed limitat		uel delivery naracteristics	Starting fuel delivery 5			e stop
	cm/1000 strokes	changed to ) rev/min 3	rev/min 4	cm <sup>1/1</sup> 000 strokes	rev/min	cm v1000 strokes 7	rev/min 8	Control rod travel mm
Pump Take	runs in tandem full-load deliv	with PE 8 P ery from VD1	100/9 -1-40	00/5 RS 114 - 0 1/103	- 401 8	- 8 006	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

6.84

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WPP 001/4 KHD 36,6 c 1

1. Edition

En

PE 8 P 100 A 920/5 RS 115 RSUV 300-600 P 8/322 R Komb.-Nr. 0 401 878 048 1- 5- 4- 3 - 8 - 7 - 2 - 6 0-45-75-135-210-270-300-345° ± 0,5° (± 0,75°) Note VDT-I-401/103

superseds KHD
company F 16 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings 2,0-2,1

Port closing at prestroke

(1,95-2,15)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)	
rev/min	mm (2)	cm1/100 strokes	cm <sup>-/</sup> 100 strokes	mm	cm //100 strokes	mm	
1	2	3	4	2	3	6	
1000	12,0	12,4-13,2	0,5				
600 600 600	9,0 12,0 15,0	5,4-6,4 11,4-12,7 17,5-18,8					
200	9,0	3,6-4,6					

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection	cr rated speed rev/min   Control rod   Control rod   travel		Intermediate rated speed		Control- lever	Low	er rated speed  Control rod travel	Torque control Control rod travel		
of control lever	mm 2	mm rev/min	4	5	6	deflection in degrees 7	rev/min 8	mm 9	rev/min	mm 11
ca.68	600	16,0			ca. 34	300	8,0	580	0	
	620 635	10,4 6,0	with	out au	xolia	y sprin	60 300	19-21 7,7-8,3	350 320	0 1,2-1,8
20	620 650 690	9,0-10,6 2,0-4,8 0-1,0	with	auxil	iary :	pring	320 360	4,5-6,3 0-1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp 40°C (104°F)	6 Rotational- speed limitat					<b>49</b> ld	4a Idle stop	
	1	changed to 1 rev/min 3	rev/min 4	cm <sup>1</sup> /1 <b>000 strokes</b> 5	rev/min	cm <sup>1</sup> /1000 strokes 7	rev/min 8	Control rod travel mm	
Pump Take	runs in tandem full-load deli	with PE 8 P very from VD	100/9 T-I-40	00/5 RS 114 - 0 1/103	401 8	18 011		-	
			•						

Checking values in brackets

\* 1 mm less control rod travel than col 2

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A18

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WPP 001/4 KHD 36,6 c 2

1. Edition

PE 8 P 100 A 920/5 RS 115 RSUV 300-600 P 8 A 322 R

Komb.-Nr. 0 401 878 088 1- 5- 4- 3 - 8 - 7 - 2 - 6

0-45-75-135-210-270-300-345° ± 0,5° (± 0,75°)

Note VDT-I-401/ 103

supersedra KHD company F 16 M 716 engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1,95-2,15)

mm (from BDC)

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque-confrol valve)
rev/min t	mm 2	cm <sup>1</sup> /100 strokes 3	cm <sup>1</sup> / 100 strokes 4	mm 2	cm <sup>1</sup> /100 strokes	mm 6
1000	12,0	12,4-13,2	0,5			
600 600 600 200	9,0 12,0 15,0 9,0	5,4-6,4 11,4-12,7 17,5-18,8 3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

	er rated speed	rev/min	Interme	termediate rated speed Lower rated sp			er rated speed	11 3 1		
Degree of deflection of control	travel mm	travel mm rev/min				Control- lever deflection	rey/min	travel	rev/min	travel
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
ca.68	600	16,0	1			ca. 34	300	8,0	580	0
	620 635	10,4 6.0	with	out au	xolia	y sprin	9 60 300	19-21 7,7-8,3	350 320	0 1,2-1,8
28	620 650 690	9,0-10,6 2,0-4,8 0-1,0	with	auxil	iary	spring	320 360	4,5-6,3 0-1,0		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp_40°C (104°F)	6 Rotational- speed limitat		uel delivery naracteristics	Starting f	uel delivery 5	<b>43</b> (d	e stop
rev/min	cm <sup>1</sup> /1000 strokes	Note changed to ) rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min	cm / 1000 strokes 7	rev/min 8	Control rod travel mm
Pump Take	runs in tandem Full-load deliv	with PE 8 P ery from VDT	100/9( -1-40	0/5 RS 114 - 0 /103	401 81	8 011		-

Checking values in brackets

\* 1 mm less control rod travel than col 2

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WPP 001/4 KHD 36,6 a 2

1. Edition

En

PE 8 P 100 A 920/5 RS 115 Komb.-Nr. 0 401 878 069 RSUV 300-750 P 9 A 322 R

supersedes\_

company KHD

engine F 16 M 716

1 - 5- 4- 3 - 8 - 7 - 2 - 6 0 -45-75-135-210-270-300-345° ± 0,5° (± 0,75°) Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1,95-2,15)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm1/100 strokes	cm <sup>1</sup> / 100 strokes	mm	cm1/100 strokes	mm
1	2	3	4	2	3	6
1000	12,0	12,4-13,2	0,5			
600 600 600	9,0 12,0 15,0	5,4-6,4 11,4-12,7 17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

	er rated speed	rev/min	Intern	1 1 Control tod				3 10	Torque control	
Degree of deflection of control	travel mm	travel mm rev/min				Control- lever deflection	rev/min	travel mm	rev/min	travel mm
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
ca. 68	750	16,0				ca. 31	300	8,0	730	0
	770 800	12,5 6,2	wit	hout au	xo1 ia	y sprin	60 300	19-21 7,7-8,3	400 320	0 1,2-1,8
<b>2a</b>	785 800 820	7,4-10,4 4,8-7,8 1,8-4,8	wit	h auxil	iary :	pring	350 470	4,6-6,2		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational speed limitat		rel delivery paracteristics	Starting fuel delivery 5		<b>49</b> Id	e stop
rev/min	cm 7:000 strokes	Note changed to ) rev/min	rev/min	cm <sup>1/1000</sup> strokes	rev/min	cm1/1000 strokes	rev/min	Control rod travel mm
Pump Take	runs in tandem ( full-load delive	vith PE 8 P ery from VDT	100/90 -I-40	0/5 RS 114 - 0 /103	- 401 81	- 8 011	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.84

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WPP 001/4 KHD 36,6 b 2

1. Edition

En

PE 8 P 100 A 920/5 RS 115 Komb.-Nr. 0 401 878 070 RSUV 300-900 POA 327 R

supersedrs= company KHD F 16 M 716

1-5-4-3-8-7-2-6

0-45-75-135-210-270-300-345° ± 0,5° (± 0,75°) Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1,95-2,15)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque-control valve)
rev/min	mm (2)	cm1/100 strokes	100 strokes	mm	cm /100 strokes	mm
1	5	3	4	2	3	6
1000	12,0	12,4-13,2	0,5			
600 600 600 200	9,0 12,0 15,0 9,0	5,4-6,4 11,4-12,7 17,5-18,8 3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe		Control rod	!nterm	ediate rat	led speed	Control	Lowe	er rated speed Control rud	3 to	rque control Control rod
deflection of control lever	travel mm 2	travel mm rev/min 3	4	5	6	lever deflection in degrees 7	rev/min 8	travel mm 9	revimin 10	travel mm 11
ca. 65	900 930 950	16,0 10,5 6,0	with	out a	uxoliar	ca. 23 y spring	300 70	8,0 19-21	880 500 330	0 0 1,2-1,8
28		9,5-12,0 4,2-6,7 0-1,0	with	auxi	liary s	pring	300 350 440	7,7-8,3 3,5-5,5 0-1,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull load stop emp 40 C (104°F)	Rotational speed firmitat	Fuel delivery characteristics		Starting t	luel delivery 5	Idle stop	
rev/min	cm //1000 strokes 2	changed to 1 rev/min 3	rev/min 4	cm·/1000 strokes 5	rev/min 6	cm /1000 strokes 7	rev/min 8	travel mm 9
Pump Take	runs in tandem full-load deliv	with PE 8 P ery from VDT	100/9( -1 <b>-4</b> 0	0/5 RS 114 - 0 /103	401 81	8 011		-

Checking values in brackets

\* 1 mm less control rod travel than col. 2



WPP 001/4 VOB 7.0 a

1. Edition

PE 6 P 100 A 320 RS 256

RQV 250-1200 PA 212/2 R

supersedes

Note sleeve position 36.0 mm - see WPP 001/4, suppl. 6

company:Volvo-BM

eston-50 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,3 - 13,1	0,5			2,5 ± 0,1
600	9	5,2 - 6,2				(max. 2,2-2,9)
	12 15	11,1 - 12,4 16,6 - 18,2				
200	9	3,2 - 4,2				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated t	peed		Intermediate	e rated sp	eed	Lower rated	speed		Sliding	leeve travel
Degree of deflection of control	rev/min Control rod travel	Control rod travel	deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		0
lever 1	mm 2	rev/min (2s 3	) lever 4	rev/min 5	mm (4)	lever 7	rev/min 8	mm (3) 9	rev/min 10	mm 11
ca. 68	1290 1560	15,0-18,3	-	-	-	ca.23	120 250	8,3-10	1290	8,2
ca. 66		15,1-18,2 8,0-13,1 0-7,3					350 500 570	0-2,5 0-2,5	•	•
	1520	0				<b>3</b>				

Torque control travel a =

ma

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten	d stop	Rotational-speed 2b firmitation intermediate speed			Starting Idle switching	• . •	Torque- travel	Control tod
rev/min	cm³/1000 strokes	rev/min 4	rev/min cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	
700	73,0 - 75,0	1230 - 1240 1 nm RW weniger			100 225	230,0-270,0	8	9
(Sp.	2 + 5 (ind	rease by <u>+</u> 1	0 cm³	)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

40

VDT-WPP 001/4 VOL 7,0d 4. Edition

E

PE 6 F 110 A 320 RS 272 RS 272Z RQV 250-1200 PA 235/2R 250-1200 250-1250 supersedes 10.77
company Volvo
engine TD 70 E

RS 272Z 250-1250
Port-closing test with/without ROBO diaphragm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	stroke 3	.0 + 0.1	mm (from BDC	)		
Rotational speed	_	Fuel delivery	Difference cm <sup>1</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>1</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	12	15, 3 - 16, 1	0,6			2,5±0,1 **
600	9	9, 1 - 10,4				(max.2,2-2,9)
	12	14,9 - 16,5		1	1	i
	15	19,3 - 21,2				
200	9	6,7 - 7,7				

Adjust the fuel delivery from each outlet according to the values in \*\* In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

**B.** Governor Settings

Upper rated	speed		Intermedial	e rated sp	eed	Lower rated	speed		Status	aava traval	
Degree of deflection of control leve:	rev/min	Control rod travel	Degree of definction of control lever	tev/min	Control rod travel	Degree of deflection of control lever		Control rod travel	Torque c	ing sleeve travel que control travel	
1	2	3	A	5	6	ever 2	rev/min	mm 9	rev/min	mm 1 1	
<u> </u>	<del> </del>	<del></del>		<del>                                     </del>	<del> </del>	<del>-   `                                  </del>	<del>-</del>	3	'0	<del>' '</del>	
ca.50	1290	15,0-18,4				ca.13	100	8,8-11,0	350	1,4-2,0	
	1560	0		į	Į.	İ	200	7,1-9,9	800	4,4-4,9	
ca.45	1200	5,0-18,2		ļ	Ì	ļ	300		1290	8,2	
	1300	<sup>3</sup> .2-13,3					400	0 -3.6			
	1400	0 - 7,4		1	ł		510	0		-	
	1510	0			ł	i			ł		
	1		L		<u> </u>			<u> </u>		<u> </u>	

Torque control travel a

mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full load of Control ro Test oil te		Rotational-speed limitation	Fuel deli	very characteristics	Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>2</sup> /1000 strokes	rev/min	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	v/min cm²/1000 strokes		mm
<u>'</u>	2	3	4	5	6	7	18	
272 700	-LDA 0,7 bar 91,0 - 93,0	1230-1240 *	LDA 700	0 bar 70,5 - 73,5	100	165 - 205		
272Z 700	-LDA 0,7 bar 108,0 - 110,0		LDA 700	0 bar 70,5-73,5	250 Stre	22 - 26 uung max.3,0	**	
	(increase by	<u>+</u> 1,0 cm <sup>3</sup> )				•		

Checking values in brackets

\* 1 mm less control rod travel than cot 2

**BOSCH** 

Upper rated s	peed			Intermediate	rated spe	ed		Lower rated	speed	1	Sliding sleeve trave	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	(a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (	<b>•</b> )	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	mm 11
ca. 50	1320 1400 1490 1580	15,0-18 8,3-13 0- 7 0		-	-	-		ca.13	100 200 375 510	8,8-11 7,0-9,7 0- 4 0	1320	8,3

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil terr		Rotational-speed 2b timitation intermediate speed	character high idle s	ristics	Starting Idle switchir	fuel delivery 6	Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	revimin (48)	rev/min	cm <sup>9</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min [	mm
۱,	12	3	4	5	6	7	8	9
See pa	ge 1	1290-1310*		·				

Checking values in brackets

• 1 mm less control rod travel than col. 2

### D. Adjustment Test for Manifold Pressure Compensator

Test at n =

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm
272 with 235/2R	0,33-0,35		
		0,19-0,25	
272Z with 235/2R	0,38-0,41		
		0,16-0,22	

En

Testoil-ISO 4113

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# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 AEC 12,0 a

1. Edition

En

PE 6 P 120 A 320 RS 298

RQV 250-1000 PA 277 R

supersedes
comparAEC
engine TL 12/10

Komb.-Nr. 0 401 846 395

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at pre	· · · · · · · · · · · ·	3 <u>.35-3.55)</u>	mm (from BDC)	<del>γ</del>	<del>,</del>	
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	12,0+0,1	20,0-20,4	0,5(0,9)			
250	7,0-7,2	1,6-2,0	0,8(1,2)			-
				j		
			1	1		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed	4	Intermediate	rated sp	eed	Lower rated	speed		Stidiog	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod (travel) mm (2a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	1 0
max. ca. 59	1000 11,0 4,0 1250	15,2-17,8 1040-1050 1085-1115 0-1,0		•	-	ca. 34		min. 8,5 7,0 - 7,2 90 = 2,0	200 470 730 1000	0,8-1,1 3,8-4,1 5,1-5,3 7,3
		_				<b>3</b> a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed (2b) Fuel delivery characteristics (5d) limitation intermediate speed (5b)		Starting Idle switching	• . •	Torque- travel	control (5)	
rev/min 1	cm <sup>3</sup> /1000 strckes	rev/min 49	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes	rev/min 8	travel mm
LDA 1000	0,7 bar 200,0-204,0 (197,0-207,0)	1040-1050*	LDA 1000	0 bar 187,0-191,0 (184,0-194,0)	- 250	- 16,0-20,0 (13,0-23,0)	•	•

Checking values in brackets

\* 1 mm less control rod travel than col. 2

### D. Adjustment Test for Manifold Pressure Compensator

AEC 12,0 a

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement  Gauge pressure = Dar	diminution Control rod travel- difference mm (1)
PE 6 PRS 298 + RQVPA 277 R	Gauge pressure — bar	0 0,31 0,29	12,0-12,1 11,3-11,4 11,8-11,9 11,4-11,6

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

## ①

[estell/iSO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 AEC 12,0 a 2

1. Edition

PE 6 P 120 A 320 RS 298

RQV 250-1100 PA 277 R

supersedes

company: AEC engine TL 12/10

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pre	stroke	3,4-3,5 _(3,35-3,55)	mm (from BDC	;)		
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	19,7-20,3	0,5			
600 600 200	9,0 15,0 9,0	8,4-9,6 18,6-20,4 3,3-4,3				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated speed	1	Intermediat	Intermediate rated speed			speed	Stidiog	Sliding sleeve travel	
Degree of rev/or deflection Control rod to mm  1 2	trol travel	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	0
ca. 61 110 115 120 126	0 8,2-13,0 0 0-7,2		-	-	ca. 25	80 150 250 350	7,0-11,0 5,1-8,6 1,1-4,8 0	500	0,9-1,2 3,7-3,9 5,2-5,6 7,9

Torque control travel a = -- mar

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel delication		Starting Idle switching	. •	Torque- travel	control (5)
rev/min 1	cm³/1000 strokes	rev/min 4a 3	rev/min 4	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min 8	travel mm
LDA 1100	0,7 bar 235,0-239,0 (233,0-241,0		LDA 1100	0 bar 210,0-215,0 (208,0-217,0	- 250	13,0-23,0	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

AEC 12,0 a 2

- 2 -

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

300			
Pump/governor	Setting	Measurement	diminution Control rod travet- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 PRS 298 + RQVPA 277 R	0,45-0,48	0,36-0,41	- 0,1 - 1,1

Notes

(1) when n

rev/min and gauge pressure

bar ( = maximum full-load control rod travel)

WPP 001/4 AEC 12,0 a 1

1. Edition

PE 6 P 120 A 320 RS 298 Z

ROV 250-1100 PA 277 R

supersedes.

Komb.-Nr. 0 401 846 389

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

company: AEC engine: TL 12/10

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1100	14,0+0,1	20,0-20,2	0,5(0,9)			
250	7,7-7,9	1,6-2,0	0,8(1,2)			7

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	speed			Intermediate	rated sp	eed	Lower rated	speed		Stiding	leeve travel
deflection	rev/min Control rod travel mm 2	mm .		of control	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3		0
max.	1100 12,5 4,0 1350	15,2-17, 1140-115 1210-124 0-1,0	0	-	-	-	ca. 34	100 250 420-4	min. 9,2 7,7-7,9 80 = 2,0	500	0,9-1,2 3,7-3,9 5,2-5,6 7,9
							<b>③</b>				

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		intermediate speed		Starting Idle switching	. •	Torque- travel	Control cod	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 40	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	ww
1	2	3	4	5	6	7	8	9
LDA 1100	0,7 bar 200,0-202,0 (197,0-205,0)	1140-1150*	LDA 1100	0 bar 176,0-180,0 (174,0-182,0	250	16,0-20,0	•	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

AEC 12,0 a 1

2,0 a 1 - 2 -

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

500			
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 6 PRS 298 Z + RQVPA 277 R	0,70	0 0,50 0,45	14,0-14,1 12,4-12,5 13,5-13,6 12,9-13,1

Notes

(1) wherein

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

40

WPP 001/4 DEE 7,6 a 1 2. Edition

En

PES 6 P 110 A 720 RS 361 Komb.-Nr. 9 400 231 108

US-RSV 400-1100 P 2/497

supersedes 10.83
company John Deere

Use overflow valve 1 457 413 010

engine 6466 A 161 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,75-2,85 (2,70-2,90)

mm (from BDC)

Rotational speed	Control rod	Fuel delivery	Difference	Control rod	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm <b>2</b>	cm <sup>1</sup> /100 strokes 3	cm <sup>1</sup> / 100 strokes 4	mm 2	cm <sup>1</sup> /100 strokes	mm 6
1100	11,3+0,1	15,0-15,3	0,4(0,75)			
400	5,5-5,7	0,8-1,3	0,45(0,75	)		
					ĺ	
· ——						

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	cr rated speed Controt rod travel mm	t rev/min Control rod travel mm rev/min 3	Interme	ediate rated	speed	Control- lever deflection in degrees 7	_	rated speed Control rod travel mm	3 To	rque control Control rod travel mm
loose	800	0,3-1,0	-	-	-	ca.24	400	5,2	1100 950	11,0-11,1 11,0-11,2
ca.48	10,0 4,0 1350	1140-1150 1240-1270 0,3-1,7					100 400 610-670 700	min.19,0 5,6-5,8 = 2,0 max. 1,0	330	11,0-11,2

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp 40°C (104°F)	Rotational- speed limitat	Starting fuel delivery 5 4 Idle stop					
rev/min	cm <sup>1</sup> /1000 strokes	Note changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
LDA 1100	0,9 bar 149,5-152,5 147,0-155,0)	1140-1156*	LDA 950 LDA 500	0,9 bar 151,0-155,0 (148,0-158,0) 0 bar 119,5-123,5 (116,5-126,5)	100	160,0-180 156.0-184	0 400 ,0)	5,6

Checking values in brackets

\* 1 mm less control rod travel than col 2

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Alfemagne par Robert Bosch GmbH.

### D. Adjustment Test for Manifold Pressure Compensator

DEE 7,6 a 1

- 2 -

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES6PRS361 + US-RSVP2/497	0,38	0,24 O	11,25-11,35 10,40-10,80 10,20-10,40

Notes.

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

**B8** 

Testoil-150 4113

WPP 001/4 MAN 11,1 q 27

1. Edition

PES6P 110 A 720 LS 375 Komb.-Nr. 0 402 046 309 RQ 300/1100 PA 658-10

company:

engine:

MAN D2566 MLUM/US

191 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(2,95-3,15)

mm (from BDCRW = 9.0-12.0 mm. Zv1.6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12.6+0.1	14.7-15.0	0,4(0,75)			
300	7,4-7,6	1,5-2,0	0,45(0,75	þ		
			· .	<u> </u> 		
				ĺ		

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Checkin PRG che rev/min 1	Control rod	Full-load: Setting po rev/min 3	•	•	rev/min	Idle spe Setting p rev/min 7	coint Central red travel		control rod travel	Torque of rev/min	Control rod 3
600 VH=	19,2-20,8 max. 46°	600	20,0	10,8 4,0 1350			7,5	100 300 390-	min 9,0 7,4-7,6 430=2,0	750 1100 880	12,6-12,7 11,8-11,9 12,3-12,5 11,9-12,2

Torque-control travel on flyweight assembly dimension a = 0,3

Speed regulation: At 1145-1160 min

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting fuel delivery fide speed		
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes	rev/min 6	Caring and travel cm <sup>3</sup> /1000 strokes:/ mm	
LDA 750	0,7 bar 147,0-150,0 (144,5-152,5)	-	LDA 600	0,2 bar 145,0-149,0 (142,0-152,0)	100	225,0-245,0 (221,0-249,0)	
LDA 1100	0,7 bar 136,0-140,0 (133,0-143,0)		LDA 500	0 bar 144,0-148,0 (141,5-150,5)	300	7,4-7,6 mm RW	
	(133,0)			(141,5-150,5)			

Checking values in brackets

### D. Adjustment Test for Manifold Pressure Compensator

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

MAN 11,1 q 27 - 2 -

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES6PLS 375	0,70		12,6-12,7
+RQPA 658-10	1	0	11,7-11,8
		0,20	12,4-12,5
		0,15	11,9-12,2
	1		

Notes

(1) when n -

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 BET 8,8 b 1

2. Edition

ROV 275-1200 PA 425-2 PE 6 P 120 A 320 RS 377 Komb.-Nr. 0 401 846 489 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

superseder 0.83 companyRVI engine: MIDS 062030 158 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Oifference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12,6+0,1	15,0-15,2	0,5(0,9)			
275	5,4-5,6	1,1-1,7	0,8(1,2)			
2/5	5,4-5,6	1,1-1,/	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed	\		Intermediate	rated sp	eed		Lower rated	speed		Slidion	leeve travel
deflection of control	rev/min Control rod travel	Control rod travel mm	<b>(e)</b>	Degree of deflection of control		Control root travel	_	Degree of deflection of control		Control rod travel		(O)
lever 1	mm 2	rev/min ( 3	<b>29</b>	lever	rev/min 5	mm 6	•	lever 7	rev/min B	mm (3)	rev/min 10	mm 11
max.	1310	15,2-17	',8	-	_	_		ca. 10	200	min. 8,5	-	1,0-1,2
ca. 64	11,6 4,0	1245-12 1375-14								5,4 - 5,6	425 900	3,0-3,5 5,6-5,9
ļ	1500	0-1,						275-375			1200	7,6
								<b>3</b> a				

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter	d stop mp 40°C (104°F) 2	intermediate speed	Fuel deli- high idle :	very characteristics (5e)	Starting Idle switchin	. •	Torque- travel	Control cod
rev/min	cm <sup>3</sup> /1000 strokes .	rev/min 4a)	rev/min	cm <sup>3</sup> /1000 strokes	ten/wiu	cm <sup>3</sup> /1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
LDA 1200	0,7 bar 150,0-152,0 (147,0-155,0)	1245-1255*	LDA 350	0 bar 51,0-55,0 (48,0-58,0)	•	-	•	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator

BET 8,8 b 1

- 2 -

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1)
PE 6 PRS 377 + RQVPA 425-2	0,70	0 0,20 0,16	12,6-12,7 11,1-11,2 12,2-12,3 11,5-11,7

Notes

(1) when it

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

# **Test Specifications** Fuel Injection Pumps ① and Governors

WPP 001/4 HIP 11,9 a

2. Edition

PE 6 P 110 A 720 RS 380 Komb.-Nr. 0 401 846 495 RQV 250-950 PA 434-1

supersedes 10.83

company: Hispavinsa

**BSR 36 A** 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC) RW = 9.0 - 12.0 mm

		<del>(-,, -, -, -, -, -, -, -, -, -, -, -,</del>			10,00	
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	15,5+0,1	19,0-19,2	0,4(0,75)			
250	8,5-8,7	2,4-3,0	0,4(0,7)			
			·			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated	speed	•	Intermediate	rated sp	eed	Lower rated	speed		Cuding	loous travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min 2a	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
•	-	3	ļ <del>*</del>	<u> </u>	6	7	8	9	10	11
max.	1050	15,2-17,8	-	-	-	ca. 16	100	min.10,0		0,5-0,8
65	ا , , ,	000 1000		•				8,5-8,7		3,8-4,2
ca.65	14,5					250 /65		475=2,0		5,2-5,4
	1250	1115-1145 0-1,0				350-465			<del>9</del> 50	7,5
						<b>②</b>				•

Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter	elivery d stop np. 40°C (104°F) 2	Rotational-speed 2b limitation intermediate speed	Fuel deli- high idle :	rery characteristics (5e peed (56)	idle	fuel delivery 6	Torque- travel	Control roo
rev/min 1	cm³/1000 strokes	rev/min 4a 3	rev/min 4_	cm <sup>3</sup> /1000 strokes 5	rev/min		rev/min 6	travel mm
LDA 950	0,7 bar 190,0-192,0 (187,0-195,0		LDA 500	0 bar 141,0-144,0 (138,5-146,5)	-	-	-	-

\* 1 mm less control rod travel then col. 2

HIP 11,9 a

-2-

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE6P RS 380 +RQVPA 434-1	0,70	0 0,45 0,34	15,5-15,6 13,2-13,3 15,0-15,1 13,7-13,9

Notes

(1) when n -

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

**B14** 

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BET 8,8 a 2

1. Edition

PE 6 P 120 A 320 RS 383 RQV 275-1100 PA 425-1 Komb.-Nr. 0 401 846 481 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes...

company: RVI

engine MIDS 062030

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	14,2+0,	15,1-15,3	0,5(0,9)			
275	5,4-5,	1,3-1,9	0,8(1,2)			
•	<u>.</u>		}	L		

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Upper rated s	speed		Intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
	rev/min Control	Control rod (a	Degree of deflection of control		Control rod travel	Degree of deflection of control	İ	Control rod travel		0
lever	rod travel	rev/min (28	lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1170	15,2-17,8	-	-	-	ca. 11	200	min.8,5	275	1,2-1,3
ca.65	13,2	1155-1165 1315-1345					275	5,4-5,6		3,3-4,0 6,1-6,3
	1450	0 - 1,0				275-365 3			100	8,0

Torque control travel a = -

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		limitation intermediate speed	high idle s	very characteristics (5e)	Starting Idle switching	. •	Torque- travel	Control rod
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 49	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm
LDA 1100	0,7 bar 151,0-153,0 (148,0-156,0)	1155-1165*	LDA 500	0 bar 87,0-89,0 (84,0-92,0)	100	130,0-150,0 (126,0-154,0)	,	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

BET 8,8 a 2

-2-

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
and the second of the second o	Gauge pressure bar	Gauge pressure = bar	mm (1)
PE6PRS 383 +RQVPA 425-1	0,70	0 0,23 0,18	14,2-14,3 12,4-12,5 13,7-13,8 12,8-13,0

Notes

(1) when n

rev/min and gauge pressure =

bar ( maximum full-load control rod travel)

# **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11.6 t 5 2. Edition

PE 6 P 120 A 320 RS 385-2 Komb.-Nr. 0 401 876 274

RSV 250-750 P 7/479

supersed 0.83

compan DAF

engine DKX 1160

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test

tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

·D B

2,8-2,9 (2.75-2.95)

mm (from BDC); RW = 9.0-12.0 mm

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm //100 strokes 3	Difference cm <sup>-/</sup> 100 strokes 4	Control rod travel mm	Fuel delivery cm <sup>1/100</sup> strokes 3	Spring pre tensioning (torque-control valve) mm
750	12,6+0,1	22,1-22,3	0,5(0,9)			
250	5,4-5,6	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min Control rod travet mm rev/min	Interme	diate rated	speed 6	Control- lever dellection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	3 to	rque control Control rod travel mm
loose	800 X =	0,3-1,0 3,75	-	*	-	ca. 18	250	5.0 4,9-5,1	-	-
ca.44	4,0	790-795 810-825 0,3-1,7					250-29	0 = 2,0 **		

\*\* Set idle auxiliary spring at 2,0 mm. The numbers denote the sequence of the fests

### C. Settings for Fuel Injection Pump with Fitted Governor

	ull load stop emp 40 C (104 F)	Rotational- speed limital		nel delivery. aracteristics	Starting (	uel delivery 5	<b>43</b> ldi	e stop Control rad
rev/min	cm <sup>1</sup> /1000 strokes 2	changed to ) rev/min 3	rev/min 4	cm 11000 strokes 5	rev/min 6	cm*/1000 strokes 7	rev/min 8	travel mm 9
750	221,0-223,0 (218,0-226,0)	790-795 *	•	<b>-</b>	-	•	250	5,0

Checking values in brackets

\* 1 mm less control rod travel than cot 2

7.84

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH, Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Alfemagne par Robert Bosch GmbH.

Testoil-ISO 4113

WPP 001/4 MAN 11.1 q 7 4. Edition

supersedes

company:

PES 6 P120 A 720 LS 388 RQ250/1100 PA 509 (1) RQV250-1100 PA 504 (2)

Komb.-Nr. 0 402 046 208 MAN-Nr. 2-7083 0 402 046 209 MAN-Nr. 2-7066 (1)

0 402 046 204 (2) MAN-Nr. 2-7113 0 402 046 205 (2) MAN-Nr. 2-7111

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

MAN engine D 2566 MK/MKP 206 kW/2200 min-1

3.84

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,95-3,15)3.00-3.10

mm (from BDC)

Cv1. 6

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,4-11,5	17,7- 18,1	0,5(0,9)			
250	6,2- 6,4	1,2- 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

**B. Governor Settings** 

RO - 509

Checkin PRG che	( ' /	Full-load : Setting po	•	•	cifications (4)	Idle spec	-		cifications (5)	Torque d	control (3)
rev/min	Control rod travel mm	rev/min 3	Control red travel mm 4	Centrol rad travel rn/m 5	rev/min 6	rev/min 7	Control red travel rnm 8	rev/min 9	Control rod travel mm	rev/min	Control rod travel mm
600	19,2-20,8	600	20,0	9,2	1145-1160	250	6,3	100	min.7,8	1100	10,2-10,3
1100 1400	Breakway 0 - 1,0	VH ca	. 49°	4,0	1180-1210				6,2-6,4	975 875	10,4-10,6 11,0-11,1
								350-	390 =2,0	750	11,4-11,5

Torque-control travel

on flyweight assembly dimension a = 0,45 mm

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting f	
rev/min 1	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	Contral red travel cm <sup>3</sup> /1000 strokes:/ mm
LDA 750	0,7 bar 177,0-181,0 (174,0-184,0)		LDA 650 LDA 600		100 250	215,0-235,0 12,0- 28,0
LDA 1100	0,7 bar 166,0 - 172,0 (162,5 - 175,5)		LDA 600	0 bar 102,0 - 106,0	100-1	70 (80-190)

Checking values in brackets

(Col.4-5 inrease by  $\pm$  3 cm<sup>3</sup>)

7.84

BOSCH BAB

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed	1	Sliding sl	eeve travet
Degree of deflection of control	rev/min Control rod travel	Control rod travel mm	(1)	Degree of deflection of control			Degree of deflection of control		Control rod travel		0
lever	mm	rev/min	(59)	lever 4	rev/min	mm (4) 6	lever	rev/min	mm (3)	rev/min 10	mm 11
max.	1100	15,2-1	7,8		<u> </u>		ca. 15		min.7,8	250	1,2
ca.66	9,2	1140-11	50					250 395-	6,2-6,4 455= 2,0	500 1150	4,0-4,3 8,4
	4,0	1220-12	50								
	1400	0 - 1	,0				(3a)				

Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem		Rotational speed (2b) limitation intermediate speed	characte high idle :	ristics	Starting Idle switchir	fuel delivery 6	Torque- travel	Control rod
rev/min 1	cm³/1000 strokes	rev/min 48	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm 1/1000 strokes 7	rev/min 8	mm 9
LDA 750 LDA 1100	0,7 bar 177,0 - 181,0 174,0 - 184,0 0,7 bar 166,0 - 172,0 162,5 - 175,5	1140-1150*	LDA 650 LDA 500 LDA 500	0,7 bar 171,0 - 177,0 0,31 bar 134,0 - 140,0 0 bar 102,0 - 106,0	100 250	215,0-235,0 12,0- 18,0 70 (80-190)	1100 975 875 750	10,2-10 10,4-10, 11,0-1, 11,4-11

Checking values in brackets (Sp. 4-5 increase by + 3,0 cm<sup>3</sup>)

\* 1 mm less control rod travel than co: 2

# D. Adjustment Test for Manifold Pressure Compensator

Test at n :

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm
388 + 509	0,7	0,43 0,31 0	11,4 - 11,5 10,9 - 11,1 10,3 - 10,4 9,2 - 9,3
388 + 504	0,7	0,43 0,31 0	11,4 - 11,5 10,9 - 11,1 10,3 - 10,4 9,2 - 9,3

En'

Edition

PES 6 P 120 A 320LS 403 Komb.-Nr. 0 402 046 198 RQ 250/1100 PA 487 R

supersede4 .80 company MAN

engine: D 2566

6 - 2 - 4 - 1 - 5 - 3 0 - 60 - 120 - 180 - 240 - 300  $\pm 0,5$   $(\pm 0,75$ )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings (2,95-3,15)

Port closing at prestroke

**estoil-ISO 4113** 

3.00-3.10

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm-3/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,0-14,	1 22,0 - 22,4	0,5(0,9)			
250 1100/650/5	7,5-7,7 00/500	1,7 - 2,3 C,4-5	0,8(1,2) 0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

Checking PRG che	\ ' /	Full-load s Setting po	int	Test spec	cifications (4)	Idle spec Setting p	point		cifications (5)	Torque d	(3)
rev/min	Control rod travel mm 2		Central red travel mm 4	Central red travel mm 5	rev/min 6	rev/min 7	Control red travel mm 8	rev/min 9	Control rod travel mm	rev/min 11	Control rod travel mm
600	19,2-20,8	600	20,0	11,5	1145-1160	250	7,6	100	min.9,1	1100	2,5-12,6
1100	Breaka-	VHca	.49°	4,0	1190-1220			<b>250</b>	7,5-7,7	955-10	35=12,9
	way						l			B75-9!	5=13,7
1300	0 - 1									750	14,0-14,1

Torque-control travel on flyweight assembly dimension a = 0,55 mm

Speed regulation: At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a		(3b) Checking values	Starting for Idle speed 2	Control red travel
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes:/ mm
1	2	3	4	5	6	7
LDA 750	1,0 bar 220,0 - 224,0 (217,0 - 227,0)		LDA 650	1,0 bar 212,0 - 218,0	100	215,0-235,0
LDA 1100	1,0 bar 185,0 - 191,0		LDA 500	=,29 bar 138,0 - 144,0	100-17	0 (80-190)
	(182,0 - 174,0)		LDA 500	0bar 115,0 - 119,0		

Checking values in brackets

MAN 11,1 1 6 - 2 -

Test at n =

**500** 

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = . bar	mm (1) .
403 + 487 R	1,0		14,0-14,1
		0,58	13,4-13,7
		0,29	11,7-11,8
		0	10,8-10,9
<u></u>			

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

#### Checking values for FM

LDA 1,0 bar	
650 1/min	(209, 0 - 221, 0)
LDA 0,29 bar	(= · · · · · · · · · · · · · · · · · · ·
500 1/min	(135, 0 - 147, 0)
LDA Obar	
500 1/min	(112, 0 - 122, 0)

10:00

# **Test Specifications** Fuel Injection Pumps (2) and Governors

WPP 001/4 DAF 11.6 x 1. Edition

PE 6 P 110 A 320 RS 407-1 Komb.-Nr. 0 401 846 472

RQ 275/1000 PA 641

supersedes compan DAF

engine: DKFL 1160 185 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings 2,8 - 2,9

Port closing at prestroke mm (from BDC) (2.75 - 2.95)RW=9,0-12,0 mm Rotational speed **Fuel delivery** Difference Control rod Control rod **Fuel delivery** Spring pre-tensioning (torque-control valve) cm³/ rev/min cm<sup>3</sup>/100 strokes 100 strokes mm cm<sup>3</sup>/100 strokes mm 6 600 12.8+0. 15.0 - 15.3**[0,4 (0,75]**) 275 7.0-7.2 0.9 - 1.4[0.45(0.75)]

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Checkin PRG che	\ ' '	Full-load s Setting po	•	•	cifications (4)	ldle spec Setting p	•		cifications (5)	Torque	control (3)
'ev/min	Control rod travel mm			Central red travel rmm 5	rev/min 6	rev/min 7	Central red travel mm 8	rev/min	Control rod travel mm	rev/min 11	travel
600	15,6-16,4	600	16,0	11,1 4,0 1300	1045-1060 1110-1140 0 - 1,0		-	275	nin. 8,6 7,0 - 7,2 90 = 2,0	1000 790	13,0 -13,1 12,1-12,3 12,6-12,8 12,2-12,5

Torque-control travel on flyweight assembly dimension a = 0,35

1045-1060 min<sup>-1</sup> Speed regulation: At

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting f	tuel delivery 6
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes / mm 7
LDA 600	0,7 bar 150,0 - 153,0 (147,5 - 155,5)	-	LDA 1000 LDA 600	0,7 bar 135,5-140,5 (132,5 - 143,5) 0 bar 136,0 - 139,0	100 275	245,0 - 285,0 (141,0 - 289,0) = 19,5-21,0 mm RW 7,0 - 7,2 mmRW

Checking values in brackets

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure

DAF 11,6 x

-2-

Pump/governor	Setting	Measurement	diminution Control rod travet- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 6 P RS 407-1 + RQ PA 641	0,50	0 0,30	12,8 - 12,9 12,1 - 12,2 12,6 - 12,7

Notes

(1) when n 🖰

rev/min and gauge pressure = bar ( = maximum full-load control rod travel)

## **Test Specifications** 2 Fuel Injection Pumps 2 MPP 001/4 RVI 9,8 a 2 and Governors

2. Edition

RO 750 PA 595-1 PES 6 P 120 A 320 RS 419-1 Komb.-Nr. 0 402 046 232 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedescompany: RVI

MIDS 0 62045 engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

tr

(2.75-2.95)

mm (from BDC)

RW = 9.0-12.0 mm

		L,70 L,30 /				
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokus 4	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
700	13,3+0,	1 24,6-24,8	0,5(0,9)		<del></del>	
250	5,8-6,0	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Checkin PRG che	g of slider ick	$\bigcirc$	Full-load : Setting po		-	cifications (4)	Idle spec	-		cifications (5)	Torque d	control 3
rev/min	Control rod travel mm 2	•	rev/min 3	Control red travel mm	Centrel red travel mm 5	rev/min	rev/min 7	Control rad travel	rev/min 9	Control rod travel	rev/min	travel
•	-		•	<b>.</b>	12,3 4,0 900	750-755 787-800 0 - 1,0	-	-	-	-	•	-

Torque-control travel on flyweight assembly dimension a =

Speed regulation: \$\\ \frac{750}{755} \text{ min}^{-1}

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

	lelivery on control lever mp. 40°C (104°F)	Control rod stop (3a)	Fuel deliv	ery characteristics	Starting :	
rev/min	cm³/-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /-1 <b>000</b> strokes	rev/min	Centre red travel cm³/1000 strokes / mm
700	246,0-248,0 (243,0-251,0)	•	-	<b>-</b>	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

# **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 01 4. Edition

En

PE 6 P 120 A 320 RS 415

RSV 250-900 P 5/475

supersede 2.82

Komb.-Nr. 0 401 876 248

companyDAF engine DKS-E 1160

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test

tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Note VDT-I-420/114

# A. Fuel Injection Pump Settings 2,90-3,00

Port closing at prestroke

(1)

(2,85-3,05)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm/100 strokes	cm <sup>1</sup> / 100 strokes	mm 2	cm /100 strokes	mm
650	11,9-12,0	18,4-18,7	0,5(0,9)	2	3	6
250	6,7-6,9	1,9-2,3	0,8(1,2)			
			· ·			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

11 1	r rated speed Control rod travel mm		Intermed	liate rated	speed 6	Control- fever deflection in degrees 7	Lower rev/min 8	rated speed   Control rod   travel   mm   9	3 To	rque control  Control rod  travel  mm   11
loose	800 x =	0,3-1,0 5,0	•	-	-	ca. 24	250	6,3	650 900	12,1-12,2 11,4-11,6
ca.46	,	940-950 1025-1055 0,3-1,7					250 395-455	6,7-6,9 = 2,0		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

Pull-load stop Test oil temp 40°C (104°F)		6 Rotational- speed limitat	Sa Fuel delivery characteristics		Starting (	uel delivery 5	4a Idle stop	
rev/min	cm /1000 strokes	Note changed to ) rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min	cm <sup>1</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
LDA 650	0,7 bar 184,0-187,0 (181,0-190,0)	940-950 *	LDA 900 LDA 600	0,7 bar  181,0-186,0 (178,0-189,0) 0 bar 129,0-132,0 (126,0-135,0)	100	310,0-350 (306,0-354 19,0-23, (16,0-26,	,0) 0	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

7.84

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rev/min decreasing pressure - in bar gauge pressure DAF 11,60 1 - 2 -Test at n -600 Control rod travel Setting Pump/governor Measurement difference Gauge pressure bar Gauge pressure = bar mm (1) PE 6 P..RS 415 + 0,70 11,9-12,0 RSV..P 5/475 9,8-9,9 11,4-11,5 10,0-10,6 0 0,27 0,12

Notes

(1) when n

rev/min and gauge pressure =

bar (= maximum fulf-load control rod travel)

# **Test Specifications** Fuel Injection Pumps (A) WPP 001/4 DAF 11,6 o 3 and Governors

2. Ausgabe

En

PE 6 P 120 A 320 RS 415-1

RSV 250-900 P 5/475

supersedes 12.82

Komb.-Nr. 0 401 876 259

DAF company

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test

DKS-E 1160 engine 206 kW (280 PS)

tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Note VDT-I-420/114

# A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 41

(2.75 - 2.95)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>1</sup> /100 strokes 3	Difference cm <sup>-/</sup> 100 strokes 4	Control rod travel mm	Fuel delivery  cm /100 strokes	Spring pre-tensioning (torque-control valve) mm
650	11,9+0,1	18,4-18,7	0,5(0,9)			
250	6,7-6,9	1,9-2,3	0,8(1,2)			
1						

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

1) Uppe	rated speed		Interm	ediate rate	d -peed	(4)	Lowe	rated speed	(3) 10	rque control
Degree of deflection of control lever	travel mm	Control rod travel mm rev/min				Control- lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 24	250	6,3	650	12,1-12,2
	x =	5,0	ł				250	6,7-6,9	900	11,4-11,6
ca.46	4,0	940-950 1025-1055 0,3-1,7					395-45	<b>5</b> = 2,0		

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat		uet delivery naracteristics	Starting f	uel delivery 5	<b>43</b> Id	e stop
rev/min	emp. 40°C (104°F) cm1/1000 strokes 2	Note changed to .) rev/min 3	rev/min	cm³/1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min	Control rod travel mm
LDA 650	0,7 bar 184,0-187,0 (181,0-190,0)	940-950*	LDA 900 LDA 600	0,7 bar 181,0-186,0 (178,0-189,0) 0 bar 129,0-132,0 (126,0-135,0)	100 250	310,0-350, (306,0-354 19,0-23,0 (16,0-26,0	,0)	<b>-</b>

Checking values in brackets

\* 1 mm less control rod travel than col 2

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63

DAF 11,6 o 3 - 2 -

Test	at	n	=

600

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE6P RS 415-1 + RSV P 5/475	0,70	0 0,27 0,12	11,9-12,0 9,8-9,9 11,4-11,5 10,0-10,6

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 DAF 11,6 o 6 1. Edition

En

PE 6 P 120 A 320 RS 4:5-1 RSV 250-1100P5/458-2 Values only apply to test nozzle-and-holder assembly 1 688 901 G'; and fuel-injection test tubing 1 680 750 067

supersedes company DAF
DKV 1160
engine -Nr. 0 401 876 273

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Note VDT-I-420/114

### A. Fuel Injection Pump Settings

2,8-2,9Port closing at prestroke(2,75 - 2,95)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm*/100 strokes	Difference cm <sup>-/</sup> 100 strokes	Control rod travel mm	Fuel delivery  cm*/100 strokes	Spring pre-tensioning (torque-control valve) mm
650	11,6+0,1	17,6-17,8	0,5 (0,9)			
250	6,5-6,7	1,4 - 2,0	0,8 (1,2)			
··					!	

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

1 Uppe	er rated speed		Interme	diate rated	d speed	(4)	_	rated speed	(3) To	rque control
Degree of deflection	Control rod	travel			İ	Control- lever		Control rod travel		Control rod travel
of control lever 1	mm 2	mm rev/min 3	4	5	6	deflection in degrees 7	rev/min	mm 9	rev/min 10	mm 11
loose	800	0,1-1,0	•	•	-	ca. 24	250	5,8	650	11,8 -11,
ļ .	x	= 5,0				j	250	6,2 - 6,4	1100	10,6 -10,
ca. 53	9,6 4,0 1390	1135-1145 1225-1255 0,3-1,7					645-705	= 2,0	800 875	11,5 -11, 10,9 -11,

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

<b>W</b>	speed limital		39 E	rel delivery paracteristics	Starting I	fuel delivery 5	4a) Idle stop	
rev/min	emp 40°C (104"F) cm <sup>1</sup> /1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm1/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 650	0,7 bar 175,5-177,5	1135-1145*	LDA 1090	0,7 bar 164,0 - 170,0	100	315,0-335 (311,0-339		6,3
į	(172,5-180,5)		LDA 600	(161,0 - 173,0) 0 bar 147,0-149,0 (144,0-152,0)	-			

Checking values in brackets

\* 1 mm less control rod travel than col 2 7.84

**BOSCH** 

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DAF 11,6 o 6

-2-

Test at n =

500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 6 P., RS 415-1	0,70		11,6 - 11,7
+ RSVP 5/458-2		0 0,44 0,35	10,5 - 10,6 11,3 - 11,4 10,6 - 11,0

Notes

(1) when n

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

①

estolisisO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 d 1

3. Edition

En

PES 6 P 120 A 320 RS 419 RQV 275-1100 PA 495 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

companyRVI engine: MIDR 062045 206 kW (280 PS)

> Komb.-Nr. 0 402 046 249

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings 2,8-2,9

Port closing mark 10,5° after port closing cylinder 1

Port closing at pres	stroke	(2.75-2.95)	mm (from EDC)	poi	rt closing cy	linder 1
1	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1100	9,7-9,8	17,6-17,8	0,5(0,9)		<u> </u>	
275	5,0-5,2	1,9-2,5	0,8(1,2)			
			}		ļ	
1						

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Upper rated	speed		Intermediate	rated sp	ead	Lower rated	speed		Stidiog	leeve travel
Degree of dellection of control lever	rev/min Control rod travel mm 2	Control rod (na) travel mm rev/min (2a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min	mm
max. ca. <b>64</b>	8,7	15,2-17,8 1155-1165 1220-1250 0-1,0	-	-	•	ca. 8 280-395	200 275	min.5,1 3,3-3,5		1,0-1,2 4,0-4,6 5,9-6,1 8,1
						<b>3</b>				

Torque control travel a =

mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed 20 limitation intermediate speed	Fuel deli- high idle :	very characteristics (5a speed (5b)	Starting Idle switchir	• . •	Torque- travel	control 5
rev/min 1	cm³/1000 strokes	rev/min 49	rev/min 4	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
LDA 1100	0,7 bar 175,5-177,5 (172,5-180,5		LDA 700	0,7 bar 163,0-171,0 (160,0-174,0)	100	150,0-170,0 (146,0-174,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

RVI 8,8 d 1

- 2 .

Test at n

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure bar	Gauge pressure = bar	mm (1)
PES 6 PRS 419 + RQVPA 495	υ,70	0 0,25 0,20	9,7-9,8 7,7-7,9 9,1-9,2 8,2-8,4

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

0

\$/? (3)

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 9,8 a 3 1. Edition

\_En

PES 6 P 120 A 320 RS 419 RQV 275-1100 PA 495-5 Komb.-Nr. 0 402 046 300 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

2.8-2.9

supersedes \_ companyRVI engine MIDR 062045 191 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing mark 10,5° after port closing cylinder 1

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,7-9,8	16,4 - 16,6	0,5 (0,9)			
275	4,9-5,1	1,7 - 2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Upper rated t	peed			Intermediate	rated sp	eed	Lower rated	speed		Sliding	leeve travel
deflection	rev/min Control rod travel mm	Control rod travel mm rev/min	( <b>b</b> )	Degree of deflection of control lever		Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm 3	J	mm (1)
1	2	3		4	5	6	7	8	9	10	11
ma <u>x</u> .	1150	15,2 -	17,	8 -	-	-	ca.9	100 1	nin.5,3	250	1,0-1,2
ca. 64	8,7	1155-11	65					275	3,6-3,8	450	3,4-3,8
	4,0	1215-12	45							850	6,1-6,3
	1350	^ - 1	,0				285-400 (3a)		Í	100	8,1
l											

Torque control travel a = \_\_\_ mn

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed ( limitation intermediate speed	<u> </u>	Fuel delivingh idle :	rery characteristics (5a)	Starting Idle switchir		Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min	•	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
<u>                                     </u>	2	3		4	5	6	7	8	9
LDA 1100	0,7 bar 164,0-166,0	1155-1165	*	LDA 700	0,7 bar 152,0-158,0	100	140,0-160,0 (136,0-164,0)	-	-
	(161,0-169,0			LDA 500	(149,0-161,0) 0 bar 100,0-102,0 (97,0-105,0)	275	3,6-3,8mm RW		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

RVI 9,8 a 3

-2-

Test	at	n

500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
• • • • • • • • • • • • • • • • • • • •	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6P RS 419 + RQV PA 495-5	0,70	0 0,23 0,20	9,7-9,8 8,5-8,6 9,3-9,4 8,7-8,9
		•	

Notes

(1) when n

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

C10

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 RVI 9,8 a 4 1. Edition

PES 6 P 120 A 320 RS 419

ROV 275-1100 PA 495-6

supersedes\_ company: RVI

Komb-Nr. 0 402 046 302

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test

engine: MIDR 062030

tubing 1 680 750 067

191 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings 2.8 - 2.9

Port closing mark 10,5° after port closing cylinder 1

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,6+0,1	17,4 - 17,6	0,5 (0,9)			
275	4,1-4,3	0,9 - 1,5	0,8 (1,2)			
						·
L			<u>l</u>			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Stiding sleeve travel	
rev/min Control	Control rod travel	<b>(b)</b>	deflection		Control rod travel	Degree of deflection		Control rod travel	J	1
mm	revimin	20	lever			iever	_	ı.	ł	mm
-						<del> </del>	-		10	11
1150	15,2 -	17,8	-	-	-	ca.9	200	min.5,9	250	1,0-1,2
							275	4,1 - 4,3		3,5-4,0
1350		_				290-400			1100	6,4-6,6 8,1
						<b>3</b>				
	rev/min Control rod travel mm 2 1150 9,6 4,0	rev/min Control rod travel mm rev/min 2 3  1150 15,2 -  9,6 1155 - 4,0 1230 -	rev/min   Control rod travel mm   rev/min   2a   3   1150   15,2 - 17,8   9,6   1230 - 1260   1230 - 1260   150   1230 - 1260   15	Control rod   Control rod   Control rod travel   Control rod travel   Control rod travel   Control rev/min   Control rev/min   Control rod travel   Control rev/min   Control rev/min   Control rev/min   Control rod rev/min   Control	rev/min   Control rod   Travel   Control rod travel   Control rev/min   Control rod travel   Control rev/min   Control rod (Table Rev)   Control rod (	Tev/min   Control rod travel   Tev/min   Control rod travel	rev/min Control rod travel mm rev/min 2 3 Degree of deflection of control lever 3 rev/min 4 Control rod travel mm 6 Control lever 7 Ca.9	Tev/min   Control rod travel   Tev/min   2   2   2   2   2   2   2   2   2	Tev/min   Control rod travel   Tev/min   2a   Control rod travel   Tev/min   Tev/min   Tev/min   Control rod travel   Tev/min   Tev/min   Control rod travel   Tev/min   2   2   2   2   2   2   2   2   2	

Torque control travel a

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed (2b) limitation intermediate speed	Fuel delivery characteristics (56) Starting fuel delivery idle switching point		Idle .		Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
<del> </del>	-	3 .	<del> -</del>	5	6	7	8	9
LDA 1100	0,7 bar 174,0-176,0 (171,0-179,0)	1155 - 1165*	LDA 700 LDA 500	0,7 bar 160,0-166,0 (157,0-169,0) 0 bar 94,0-96,0		140,0-160,0 (136,0-164,0) 4,1-4,3mmRW	-	-
				(91,0-99,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2 7.84

BOSCH

RVI 9,8 a 4

•	4	-

T	P	st	at	n

500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure bar	Gauge pressure :- bar	mm (1) .
PES 6 P RS 419	0,70		10,6 - 10,7
+ RQVPA 495-6		0	8,4 - 8,5
		0,27	10,0 - 10,1
		0,22	8,9 - 9,1

Notes

(1) when n

rev/min and gauge pressure =

bar (~ maximum full-load control rod travel)

**C12** 

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 9,8 a 5

1. Edition

PES 6 P 120 A 320 RS 419 RQV 275-1100 PA 495-7 Komb.-Nr. 0 402 046 303 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test

companyRVI engine: MIDR 062045 157 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel injection Pump Settings

tubing 1 680 750 067

Port closing at pret	troke	2,8-2,9 (2,75-2,95)	mm (from BDG)			
Rotational speed rev/min	1	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>2</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	7,8-7,9	13,2-13,4	0,5(0,9)			
275	4,6-4,8	1,7-2,3	0,8(1,2)			
				lafter po	sing mark at 1 rt closing for ol-rod travel	1st. cylinder

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	pper rated speed Lower rated speed Lower rated speed				Sliding sleeve travel						
deflection	rev/min Control	Control rod travel	<b>(b)</b>	Genection		Control rod travel	Degree of deflection		Control rod travel	3,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0
of control lever	rod travel	uu nu	<b>28</b>	of control lever	rev/min	mm (4	of control lever	rev/min	mm ③	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
max.	1150	15,2-17	,8	-	-	-	ca. 8	200	min. 5,0	275	1,5-1,6
ca. 64	6,8	1155-110	55					275	3,4-3,6	450	3,4-3,8
		1195-122						ł		850	6,1-6,3
	1350	0-1,0	)			ł	280-395			1100	8,1
						<u> </u>	<b>3</b>				

Torque control travel a =

- mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		limitation intermediate speed	high idle s	very characteristics (5a)	Starting fuel delivery (6) idle switching point		Torque- travel	control 5 Control rod
rev/min 1	cm³/1000 strokes	rev/min 4a	rev/min 4	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm 9
LDA 1100	0,7 bar 132,0-134,0 (129,0-137,0)	1155-1165*	LDA 700 LDA 500	0,7 bar 120,0-126,0 (117,0-129,0) 0 bar 88,0-90,0 (85,0-93,0)		150,0-170,0 (146,0-174,0) 3,4-3,6 mm RW	•	•

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

RVI 9,8 a 5

- 2 -

500	·-··			
Pump/governor	Setting	Measurement	Control rod travel	diminution difference
••	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
PES 6 PRS 419	0,70			7,8-7,9
+ RQVPA 495-7		0 0,16		7,3-7,4 7,5-7,6
			·	
	1	ł	ľ	

Notes

(1) when n

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

C14

Testor-ISO 41

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 d 2

1. Edition

ROV 275-1050 PA 495-4

PES 6 P 120 A 320 RS 419-2 RQV 275 Komb.-Nr. 0 402 046 294

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

companyRVI engine: MIDS 062045 169 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

2.8-2.9

A. Fuel Injection Pump Settings

Port closing mark at 9,5° cam shaft after port closing for 1st. cylinder

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delivery  cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
1050 275	8,8-8,9 3,3-3,5	15,5-15,7 0,7-1,3	0,5(0,9) 0,8(1,2)	2	3	6
						_

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed		Sliding	leeve travel	
Degree of deflection of control	rev/min Control	Control rod teavel	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel	Silvings		
lever	rod travel mm	rev/min (28)	of control lever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	шш	
1	2	3	4	5	3	7	8	9	10	11	
max.	1130	15,2-17,8	-	-	-	ca. 8	200	min.5,2	250	1,0-1,2	
ca. 63	7,8	1105-1115	ŀ				275	3,3-3,5		4,8-5,0	
	4,0	1135-1165		İ	•				1050	7,5	
[	1300	0-1,0				275-390					
						<b>3</b> a					

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		intermediate speed	Fuel delin	rery characteristics (5e)	Starting fuel delivery 6 idle switching point		Torque- travel	Control cod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 40	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
LDA 1050	0,7 bar 155,0-157,0 (152,0-160,0		LDA 700 LDA 500	0,7 bar 145,0-151,0 (142,0-154,0 0 bar 106,0-108,0 (103,0-111,0	) <sub>275</sub>	140,0-160,0 (136,0-164,0) 7,0-13,0	•	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.84

BOSCH

RVI 8,8 d 2

2 -

Testatn

500

rev/min decreasing pressure - in bar gauge pressure

300			
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 PRS 419-2 + RQVPA 495-4	0,70	0 0,24 0,23	8,8-8,9 8,0-8,2 8,5-8,6 8,2-8,4

Notes

(1) when n

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 d 3

1. Edition

PES 6 P 120 A 320 RS 419-2 RQV 275-950 PA 698 Komb.-Nr. 0 402 046 293 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes company RVI MIDS 062045 engine 129 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
2,8-2,9
Port closing at prestroke (2,75-2,95) mm

Port closing mark at 9,5° cam shaft after port closing for 1st. cylinder at control-rod travel 9.0-12.0 mm.

Rotational speed	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
500	8,0-8,1	10,6-10,8	0,5(0,9)		3	
275	4,4-4,6	1,7-2,3	0,8(1,2)			-

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated	speed	•	Intermedial	e rated sp	eed	Lower rated	speed		Clidina	
Degree of deflection of control lever	rev/min Control rod travel mm 2	mm C	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	mm
max.	1070	15,2-17,	8 -	-	-	ca. 8	200	min. 5,1	275	1,5-1,6
ca. 62	7,0 4,0 1200	1010-102 1045-107 0-1,0				280-395		3,3 - 3,5		3,8-4,3 6,4-6,7 7,6
						<b>3a</b> )				

Torque control travel a = 0,6 mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel delivery characteristics (5a) high idle speed (5b)		Starting Idle switching	. •	Torque travel	-control 5
rev/min 1	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rov/min	travel mm
500	106,0-108,0 (103,0-111,0)	1010-1020*	950	124,0-130,0 (121,0-133,0		150,0-170,0 (146,0-164,0 3,3-3,5 mm RW	950 750	8,0-8,1 7,3-7,4 7,6-7,8 7,4-7,7

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.84

C17

BOSCH

Geschäftsbereich KH. Kundendienst, Kfz-Ausrüstung
C by Robert Bosch GmbH, D-7 Stutigert 1, Postfach 50 Printed in the Federal Republic of Germany,
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①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11,4 s

En

1. Edition

PES 6 P 110 A 820 LS 422

RQV 300-1100 PA 594-5

Komb.-Nr. 0 402 046 305

supersedes ..

company Daimler-Benz

OM 407 147 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel injection Pump Settings

Port closing at prestroke 3,0 - 3,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>2</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,2+0,1	11,0 - 11,2	0,4 (0,8)			
300	8,0 -8,2	1,4 - 2,0	0,4 (0,7)			
600	-	C, Sp. 4 u. 5.	0,6 (0,9)	•		

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Upper rated s	peed			Intermediate	rated sp	eed		Lower rated	rev/min 9 rev/min 10 min. 8,8 250		lanca traval		
	rev/min Control rod travel mm 2	travel (	기	Degree of deflection of control lever	rev/min	Contro travel mm	frod ①	Degree of deflection of control lever	1_	travol		rev/min	mm (1)
			一	-	-			<del></del>	<del></del>				11
<u>max. 11</u>	00	5,2 - 17	<u>,8</u>	-	-	•	•	ca. 32	100	min.	8,8	250	1,0 -1,2
ca.59	9,2 4,0 1350	1140-115 1175-120 0 - 1,5	5						300	7,3-7	7,5		3,5-3,7 5,0-5,4 7,7
								300-500 ③					

Torque contro: travel a = \_ \_ mn

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed ( limitation intermediate speed	Fuel deli high idle	epeed (56)	Idle	fuel delivery 8	Torque- travel	control (5)
rev/min	cm³/1000 strokes	rev/min (	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1100	110,0-112,0	1140-1150 *	600	93,0 - 97,0	100	130,0-150,0	~	-
	(107,0-115,0			(90,0-100,0)		(126,0-154,0)		
							l	ļ

Checking values in brackets

\* 1 mm less control rod travel than col. 2 7.84

BOSCI

# **Test Specifications** Fuel Injection Pumps 1 WPP 001/4 RVI 12,0 c and Governors

Testoil-ISO 411

PES 6 P 120 A 320 RS 426

ROV 250-1100 PA 570

supersedes5.83 company: RVI

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

engine MIDS 063540 195 kW (265 PS)

Komb.- Nr. 0 402 046 219

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Yesters

A. Fuel Injection Pump Settings 2.8-2.9

Mark for start of pump delivery on tester body 12° after start of pump delivery, cyl.1

Edition

Port closing at pres	stroke	(2 <sup>75</sup> -2 95)	mm (from BDC)			
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes		mm	cm <sup>3</sup> /100 strokes	mm
<u> </u>	2	3	4	5	3	6
650	10,3+0,1	18,0 - 18,3	0,5(0,9)			<u> </u>
250	4,9-5,1	1,3 - 1,9	0,8 (1,2)		·	
				,		

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Stidiog	leeve travel
deflection	rev/min Control	Control rod (travel	ノ deflection	İ	Control rod travel	Degree of deflection		Control rod travel	0	
	rod travel mm	rev/min (2	of control lever	rev/min	mm ①	of control lever	rev/min	mm ③	rev/min	
	-	3	<del>- </del>	P		<del> '</del>	8	9	10	11
max.		15,2-17,8		-	-		100	min. 5,5		0,7-1,0
ca.6I	8,3 4,0	1145-1159 1220-1250					250	3,9-4,1	500 800	3,4-3,6 4,8-4,9
	1400	U - 1.0				275-403	Ì		100	6,9
į į										
						<b>③</b>				

Torque control travel a = 1.2

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil te	d stop				Fuel delivery characteristics (5e) high idle speed (50)		fuel delivery 6	Torque- travel	control (5) Control rod	
rev/min 1	cm³/1000 strokes	rev/min 3	•	rev/m <del>i</del> n 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9	
LOA 650	0,7 bar 180,0-183,0 (177,0-186,0)	1140-1150	*	LDA 1100 LDA 500	0,7 bar 170,0-173,0 (167,0-176,0) 0 bar 122,0-126,0 (119,0-129,0)	100	135,0-155,0 (131,0-159,0	)650 1030	9,1+0,2 10,3+0,1 9,4+0,1 9,9+0,2	

Checking values in brackets

1 mm less control rod travel than cct. 2

RVI 12.0 c - 2

Testatin

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure bar	Gauge pressure - bar	mm (1)
PFS 6 P RS 426 + PA 570	0,9	0 0,29 0,24	10,3 - 10,4 8,6 - 8,7 9,8 - 9,9 9,0 - 9,2

Notes

(1) when n

rev/min and gauge pressure :

bar ( \* maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 11,4n

3. Edition

En

estoil-ISO 4113

PES 6 P 100 A 820 LS 432

RSV 350-750 P1/487

Komb.-Nr. 0 402 076 051

supersedes 3.82
company Daimler-Benz
OM 407
engine 114 kW (155 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) mm (from BDC) Zy1. 6

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
700	14,2+0,1	12,9 - 13,1	0,3(0,6)			
350	8,4-8,6	1,2 - 1,8	0,3(0,5)			
			i .			
	l <sub></sub> -			ļ		

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Upper	rated speed		Intermediate	e rated spe	ed	4 Lowe	r rated spi	3 Torque control		
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	-	-	-	] -	
	x =	2,25								
€a.34	13,2 4,0 850	750-755 788-801 0,3-1,7	•							

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-l	oad stop	6 Rotational- speed limitat.		el delivery sracteristics	Starting Idle	fuel delivery	(59) Idi	e stop
Test oil ten rev/min 1	np. 40°C (104°F) cm³/1000 strokes 2	Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 6	Control rod travel mm
700°	129, 0-131, 0 (127, 0-133, 0)	750-755 *	-	•	-	•	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

WPP 001/4 MB 9,5 a 2

3. Edition

PES 5 P 110 A 820 LS 434

RSV 350-750 P 1/487

1 - 3 - 5 - 4 - 2 je  $72^{\circ} - 0.5^{\circ} (-0.75^{\circ})$ 

supersede 7.83
Daimler-Benz OM 409

Komb.-Nr. 0 402 075 001

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings 3,0-3,1 (2,95-3,15) mm

mm (from BDO3y1. 5; RW = 9.0 - 12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm³/100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
730	13,1+0,1	13,5 - 13,7	0,4(0,8)			
350	7,7 -7,9	1,1 - 1,7	0,4(0,7)			
				L	<u> </u>	_ {

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper	rated speed		Intermediate	rated spe	ed	4 Lowe	r rated spe	ed	3 Torque control		
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	
loose	800	0,3-1,0	-	•	-	•	-	•	-	•	
]	x =	2,5									
දූූෘ. 34 ්	12,1 4,0 850	750-755 790-803 0,3-1,7						Ļ			

<sup>\*</sup> Set idle auxiliary spring at 2,0 mm. The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-l	load stop	6 Rotational- speed limitat.		el delivery tracteristics	Starting Idle	fuel delivery	(50) Idi	e stop
Test oil ten rev/min t	np. 40°C (104°F) cm³/1000 strokes . 2	Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min	Control rod travel mm 9
730	135,0-137,0 (132,0-140,0	750-755*	-	-	100	130,0-150,0 126,0-154,0	)	-

Checking values in brackets

\* 1 mm less control rod travel than cot 2

Testoil-iSO 4113

# **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 MB 9,5 a 4 3. Edition

PES5P110A820 LS 434

RQ300/1100 PA 327-4

supersedes 7.83 company Daimler-Benz

engine OM 409

135 kW (184 PS)

Komb.-Nr. 0 402 045 023

1 - 3 - 5 - 4 - 2 je  $72^{\circ} \div 0.50^{\circ} (\div 0.75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings

Port closing at prestroke

mm (from BDC+1 . 5

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,4+0,1	11,0-11,2	0,4(0,8)			
300	7,6-7,8	1,2 - 1,8	0,4(0,7)			
				·		
	1		İ	j		

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Checkin PRG che rev/min 1	Control rod travel mm				rev/min	Idle spec Setting p rev/min 7	coint Control red travel		cifications 5 Control rod travel mm	rev/min	Control rod	3
600	13,8-14,6	600	14,2	9,4 4,0 1300			7,1	300	min.9,1 7,6-7,8 420=2,0	-	-	

Torque-control travel on flyweight assembly dimension a =

1145-1160 min Speed regulation: At

1 mm less control

# C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	3	Starting t	luel delivery
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes		rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ mm 7
1100	110,0-112,0 (107,5-114,5)	•	600	90,0-94,0 (87,0-97,0)		100	130,0-150,0 (126,0-154,0)

Checking values in brackets

8.84

BOSCH

(1)

## **Test Specifications** Fuel Injection Pumps 1 JPP 001/4 CAT 7,0 a 1. Edition and Governors

PES 4 P 80 A 720 LS 440 RQV 375-1100 PA 610 Komb.-Nr. 9 400 087 277

supersedes

company Caterpillar engine 3304 NA 100 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel injection Pump Settings

1,95-2,05 Port closing at prestroke mm (from BDC); RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,0+0,1	11,2-11,3	0,2(0,35	)		
375	6,7-6,9	1,0-1,7	0,2(0,3)			
		_				

Adjust the fuel delivery from each outlet according to the values in [

### **B. Governor Settings**

Upper rated s	peed			Intermediate	rated sp	eed		Lower rated	speed			Clining		1
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	(1) (2)	of control	rev/min	Control ( travel mm	rod	Degree of deflection of control lever	rev/min	Control travel	rod 3	Sliding s	mm	<u>()</u>
<del>'</del>	<del>                                     </del>	3		ļ <u>.</u>		6		7	8	9		10	11	
max.	1030	15,2-1	7,8	-	-	-		ca. 14		min.		1100	8	,3
ca.67	12,1 4,0 1350	1130-1 1230-1 0 - 1	260					350-450	480-5	5,9.   640 =				
								<b>③</b>						

Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) 2		Rotational-speed (2b) firmitation intermediate speed	Fuel delivery characteristics Se high idle speed So		Starting fuel delivery 6 Idle switching point		Torque- travel	control (5)
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1100	112,0-113,0 (110,5-114,5)	1130-1140 *	700	107,5-110,5 (106,5-111,5		152,0-172,0 = 17,6-18,6 mm RW	-	•
					375	5,9-6,1 mm RW		

Checking value, in brackets

\* 1 mm less control rod travel than col. 2

## Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 DAF 11,6 u 2 2. Edition

En

PE 6 P 110 A 720 RS 441-1

RSV 250-750 P 7/479-1

Komb.-Nr. 0 401 876 270

supersedes 7 • 83
DAF
company
engine DHS 825 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,8 - 2,9 (2,75-2,95)

mm (from BDC)

Control rod travel mm 2	Fuel delivery cm //100 strokes 3	Difference cm <sup>-/</sup> 100 strokes 4	Control rod travel mm 2	Fuel delivery cm*/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
11,6+0,1	14,3-14,6	0,4(0,75)			
4,8-5,0	0,9-1,3	0,45(0,75)			
	}				
	mm 2 11,6+0,1	travel mm 2 cm //100 strokes 2 11,6+0,1 14,3-14,6	travel cm //100 strokes cm // 100 strokes 4  11,6+0,1 14,3-14,6 0,4(0,75)	travel	travel

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

1) Uppe	er rated speed		Interm	ediate rate	d speed	(4)	Lowe	r rated speed	3 Torque control		
Degree of deflection of control lever	Control rod travet mm 2	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod fravel mm	rev/min	Control rod travel mm	
loose	800 x =	0,3-1,0 4,0	-	•	•	ca. 18	250	4,9 4,8-5,0	•	-	
ca. 45	10,6 4,0 950	790-795 810-825 0,3-1,7					250-29	90 = 2,0 **			

The numbers denote the sequence of the tests

\*\* Set idle auxiliary spring at 2,0 mm.

## C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	speed minual		uel delivery paracteristics	Starting I	fuel delivery 5	4a Idle stop		
rev/min	cm/1000 strokes	Note changed to ) rev/min	rev/min 4	cm <sup>1/</sup> 1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 8	Control rod travel mm	
750	143,0-146,0 (140,5-148,5)	790-795*	•	-	-	-	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

WPP 001/4 MB 11.4 1 4

4. Edition

7.83

supersedes company

Daimler-Benz

OM 407

121 kW

PES 6 P 110 A 820 LS 442 Komb.-Nr. 0 402 076 052

RSV 350-750 P 1/487

engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDCZvl. 6

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
730	12,1+0,	11,9 - 12,1	0,4(0,8)			
350	8,1-8,3	1,3 - 2,1	0,4(0,7)			
						İ
	1		•		1	

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper	rated speed		Intermediate	rated spe	ed	4 Lowe	r rated spe	eed	3 Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800 x=	0,3-1,0	-	•	•	-	•	-	-	-
ક <sup>a.35</sup>		750-755	න 							

<sup>\*</sup> Set idle auxiliary spring at 2,0 mm.

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to	oad stop	6 Rotational- speed limitat. 3a Fuel delivery characteristics			Starting idle	fuel delivery	Sa Idle stop		
Test oil tem rev/min 1	1	Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
730	119,0 - 121,0 (116,0 - 124,0	750-755* )	-	-	100	130,0-150,( (126,0-154,	0)	•	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 MB 11,4 1 9

1. Edition

PES 6 P 110 A 820 LS 442 Komb.-Nr. 0 402 046 298

RQ 250/1100 PA 327-8

Daimler-Benz company:

OM 407 engine:

162 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

Rotational speed rev/min	travel .	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1100	11,0+0,	11,6-11,8	0,4 (0,8	)		
250	8,0-8,	1,2 - 1,8	0,4 (0,7	)		
600	-	C, Sp.4 u. 5	0,6 (0,9	)		
		, sp		,		

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Checkin PRG che	ig of slider ock	<b>①</b>	Full-load : Setting po	•	-	cifications (4)	idle spec	•		cifications (5)	Torque	control 3
rev/min 1	Control rod travel mm 2		rev/min 3	Central red travel mm 4	Centrel red travel mm 5	rev/min 6	rev/min 7	Central rad travel mma 8	rev/min 9	Control rod travel	rev/min	travel
550	13,0 -	14,	0 550	13,5		1145-1160 1180-1210 0 - 1,0	250			min. 9,0 7,5-7,7 70 = 2,0	•	-
orque-c	ontrol travel						<u> </u>	11	45 -	1160 min.	<u>-1</u>	1 mm less contro

Torque-control travel

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting I	uel delivery
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ mm 7
1100	116,0 - 118,0 (113,5 - 120,5)	-	600	93,0 - 97,0 (90,0 - 100,0)	100	130,0 - 150,0 (126,0 - 154,0)

Checking values in brackets

7.84

**BOSCH** 

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Testoil-ISC 4113

## Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 MB 11,41 10

1. Edition

En

PE 6 P 110 A 820 LS 442 RQ 250/950 PA 483-2

Komb.-Nr. 0 402 046 299

supersedes

company:Daimler-Benz engine: OM 407 147 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pupp Settings

Port closing at prestroke

(3,15-3,35)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	11,5+0,	1 11,3-11,5	0,4(0,8)			
250	8,4-8,6	1,4-2,0	0,4(0,7)			
600	-	C, Sp. 4 u. 5	0,6(0,9)			
;						

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

1	_	Full-load		-		idle spe	•		(	Torque d	_
PRG che	( )	Setting po	int	Test spe	cifications $(4)$	Setting p	point	Test spe	cifications (5)		3
rev/min	Control rod travel mm 2	revimin 3	Control rad travel mm 4	Central rad travel mm 5	rev/min	rev/min 7	Central rad travel rmrn 8	rev/min 9	Control rod travel mm 10	rev/min	travel
600	13,0-14,0	600	13,5		995-1010 1015-1045 0-1,0	250	8,1	100 250 330-	min.9,7 8,0-8,2 370=2,0	•	•
				L		<u> </u>	<del>او</del>	<del>5-101</del>	0 min -1		

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp 40°C (104°F)	Control rod stop 3a	Fuel delivery characteristics			Starting t	g fuel delivery 6		
rev/min 1 950	cm <sup>3</sup> /-1000 strokes 2	rev/min	rev/min 4	cm <sup>3</sup> /-1000 strokes 5		rev/min 6	red travel cm <sup>3</sup> /1000 strokes/mm 7		
	(110,0-118,0)		000	(99,0-109,0)		100	140,0-160,0 (136,0-164,0)		

Checking values in brackets

7.84

BOSCH

**D** 

## Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11,4 L3

4. Edition

Testoil-150 4113

PES 6 P 110 A 820 LS 442

ROV 300-1100 PA 594-3

supersede7.84
Daimler-Benz

engine: 0M 407

162 kW (220 PS)

Komb.-Nr. 0 402 046 233

0 402 046 301

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection, Pump Settings

Port closing at prestroke (3,15-3,35) mm (from BDC) Zy1. 6

Rotational speed rev/min	Control sod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100 300	11,0+0, 8,0-8,2		0,4(0,8) 0,4(0,7)	L		

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated s	speed	•		Intermediate	rated sp	eed		Lower rated	speed			Sliding	leeve travel
Degree of deflection	rev/min Control	(1446)	(1)	Degree of deflection		Control travel	rod	Degree of deflection		Control re	od	0	<u> </u>
of control lever	rod travel mm 2	mm rev/min 3	29	of control lever 4	rev/min 5	mm 6	•	of control lever 7	rev/min 8	mm 9	3	rev/min 10	mm 11
max.	1140	15,2-17,	8	-	-		-	ca.32	100 300	min. 7,3-7		250 530	1,0-1,3 3,9-4,2
ca. 60	10,0 4,0 1300	1140-115 1175-120 0 - 1,	5					320-450		, ,,,,,,	,,,	820 1100	5,5-5,8 8,1
								39					

Torque control travel a =

ШШ

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test off ten		Rotational-speed 2b limitation intermediate speed	Fuel delinings idle s	rery characteristics (5e poed) (56)	Starting Idle switching		Torque- travel	Control cod
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1100	116,0-118,& (113,0-121,0)	1140-1150*	600	93, 0- 9 7, 0 90, 0- 100, 0)	100	130,0-150,0 126,0-154,0	•	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps (1) and Governors

WPF 001/4 MB 11,41 11

1. Edition

\_Er

PES 6 P 110 A 820 LS 442

ROV 300-1100 PA 594-4

Komb.-Nr. 0 402 046 229

supersedes

company Daimler-Benz

engine: OM 407

176 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Port Closing at pres		<u>(3.15-3.35)</u>	min (non boc)			
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,	1 12,9-13,1	0,4(0,75			
300	7,8-8,0		0,45(0,7	<b>)</b>		
600	-	C, Sp.4 u. 5	(0,9)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Sattings**

Upper rated a	speed	•		Intermediate	rated sp	eed		Lower rated	speed		Sliding	   Sliding sleeve travel		
deflection	rev/min Control rod travel mm	TEVE		Degree of deflection of control lever	rev/min	Control re travel mm	<b>4</b>	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm	rev/min	1 0		
max. ca.61			50 10	•	-		•	ca.30 320-450	300	min.9,0 7,3-7,5	250 530 820 1100	1,0-1,2 3,5-3,7 5,0-5,4 7,7		
		,						<b>③</b>						

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten		Rotational-speed (25) limitation intermediate speed	Fuel deli- high idle s	very characteristics (5a)	Starting Idle switchin	. •	Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1100	129,0-131,0 (126,5-133,5)	1140-1150*	600	119,0-123,0 (116,0-126,0)	100	130,0-150,0 (126,0-154,0	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2



## **Test Specifications** Fuel Injection Pumps (A) MPP 001/4 MB 11,4 1 6 and Governors

3. Edition

En

PES 6 P 110 A 820 LS 442-1

RSV 350-1100 P 0/485

supersede 7.84 Daimler-Benz OM 407

Komb.-Nr. 0 402 076 053

177 kW (241 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

3,2 - 3,3 (3,15-3,35)

Control rod travel mm 2	Fuel delivery cm <sup>1</sup> /100 strokes 3	Difference cm <sup>-//</sup> 100 strokes 4	Control rod travel mm 2	Fuel delivery cm*/100 strokes	Spring pre-tensioning (torque-control valve) mm
11,7+0,1	12,5-12,7	0,4 (0,8)			
7,8-8,0	1,4-2,0	0,4 (0,7)			
				·	
	mm 2 2	travel mm 2 cm 1/100 strokes 3 11,7+0,1 12,5-12,7	travel mm 2 cm <sup>1</sup> /100 strokes 3 cm <sup>1</sup> /100 strokes 4 cm <sup>1</sup> /100 strokes 4	travel	travel

Adjust the fuel delivery from each outlet according to the values in [

## **B. Governor Settings**

1 Uppe	Upper rated speed rev/min			Intermediate rated speed			Lower	3 Torque control		
Degree of deflection of control	travel	travel			1	Control- lever deflection	rev/min	Control rod travel		Control rod travel
lever 1	2	3	4	5	6	in degrees 7	8	9	rev/min	11
loose	800	0,3-1,0	-	-	-		350	7,9	-	-
	×	= 3,0					350	7,8-8,0 5 = 2,0		
ca.51	10,7 4,0 1250	1140-1150 1220-1250 0,3-1,0					435-49	5 = 2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel injection Pump with Fitted Governor

	ull-load stop emp_40°C (104°F)	Rotational- speed limital Speed limital Characteristics			Starting (	fuel delivery 5	4a Idle stop	
rev/min	cm //1000 strokes	changed to ) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>1/</sup> 1000 strokes 7	rev/min 8	Control rod travel mm
1100	125,0-127,0 (122,0-130,0)	1140-1150*	600	107,0-111,0 (104,0-114,0)	100	140,0-160 136,0-164	,0 - ,0)	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

## Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 DAF 8,302 1. Edition

En

PE6P100 A 720 RS 447-1 RSV 250-750 P 7/479-1 Komb.-Nr. 0 401 876 269

supersedes

company engine DAF DHT 825 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump, Settings

Port closing at prestroke

Testorico 4150

(3,15-3,35)

mm (from BDE) RW = 9,0-12,0 mm

Rotational speed			Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm/100 strokes	cm <sup>1</sup> / 100 strokes	mm	cm V100 strokes	mm
1	2	3	4	2	3	6
750	12,7+0,1	14,3-14,5	0,35(0,6)			_
250	5,3-5,5	0,9-1,3	0,35(0,55)			
	<u> </u>					

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Uppe û: re of dr sction of control lever	created speed Control rod travel mm	Control rod travel mm rev/min	Interm	ediale ra		speed	Controt- fever deflection in degrees 7		raled speed  Control rod  travel  mm  9	3 To	rque control Control rod travel .mm
loose	800 X = :	0,3-1,0 3,75	-		•	-	ca.17	250 250	5,4 5,3-5,5		
ca.44	4,0	790-795 810-825 0,3-1,7						250-295	= 2,0 **		

The numbers denote the sequence of the tests

\*\* Set idle auxiliary spring at 2,0 mm.

### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load slop lemp 40°C (104°F)	6 Rotational- speed limitat		uel delivery paracteristics	Starting (	luel delivery 5	(1d)	e stop  Control rad
rev/mgs 1	cm //1000 strokes	changed to: ) rev/min	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min 6	cm <sup>1</sup> /1000 strokes 7	rev/min 8	travel mm 9
750	142,5-144,5 (140,5-146,5)	790-795*	-	-	250	- 9,0-13,0 (6,5-15,5)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.84

**BOSCH** 

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## **Test Specifications** Fuel Injection Pumps 1 and Governors

WFP 001/4 BRE 23,1 a 1

1. Edition

PE 6 P 130 A 320/3 LS 449 ROV 300-750 PA 682

1-6-5-4-3-2

0-75-120-195-240-315° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test

tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedescompany: Breda engine: ID 36 S-6 V Komb.-Nr. 0 401 836 023

## A. Fuel Injection Pump Settings 3,5-3,6 Port closing at prestroke (3,45-3,65) mm

mm (from ADC)

		(3,45-3,05)	( 0 000)			
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm
750	12,0+0,1	23,0-23,3	0,6(1,0)			
300	6,7-6,9	2,4-3,0	1,0(1,4)			
			ļ			1
			·			j

Adjust the fuel delivery from each outlet according to the values in E

### **B.** Governor Settings

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed		Sliding	leeve travel
Degree of deflection of control lever	rodtravel	mavel (		Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min 10	mm 11
max.	770	15,2-17,	8	-	-	-	ca. 13		in.8,3 5,7-6,9	300 600	1,3-1,4
ca. 66		790-800 835-865 0-1,0					325-435		,,-0,3	750	5,3-5,8 8,1
							<b>③</b>				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of	d stop	limitation	Fuel delh high idle s	very characteristics (5e poed (50)	Idle		Torque- travel	control (5)
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	switchii rev/min	1	rev/min	Control rod travel mm
1	2	3	4	Š	8	7	8	9
750	230,0-233,0 (226,5-236,5)		•	-	-	-	-	•

Chucking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,4 e

1. Edition

PES 6 P 110 A 720 LS 455

RQV 250-1100 PA 674

supersedes

Komb.-Nr. 0 402 046 307

companyMAN
engine: D 2566 MTE

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

800 12,8+0,1 15,9-16,2 0,4(0,75)	10
الاستخداد المستحد المستحد المستحدد المس	
250 6,9-7,1 1,1-1,6 0,45(0,75)	

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed		Sliding	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm 2	travel C	3	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3		0
max. ca. 46	1150 10,5 4,0 1350	15,2-17, 1140-115 1205-123 0-1,0	0 5	•	•	•	ca. 13	100 250 340-	min.8,5 6,9-7,1 400 = 2,0		1,4-1,7 5,0-5,2 7,9
							<b>③</b>				

Torque control travel a = 1,3 mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed (2b) limitation intermediate speed	speed (2b) Fuel delivery characteristics (5e) Starting fuel delivery idle speed (5b)		. Clavel		Control roo	
rev/mm	cm³/1000 strokes	rev/min 46	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	trovel min
LDA 800 LDA 1100	0,7 bar 159,0-162,0 (156,5-164,5 0,7 bar 136,0-140,0 (133,0-143,0)	:	LDA 650 LDA 500	0,7 bar 160,0-164,0 (157,0-167,0) 0 bar 97,0-100,0 (94,5-102,5)		215,0-235,0 (211,0-239,0)	800 1100 900 1000	12,8+0, 11,5+0, 12,4+0, 11,7+0,

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator

MAN 11,4 e

- 2 -

Testatn =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure - bar	Gauge pressure bar	mm (1)
PES 6 PLS 455 + RQVPA 674	0,70	0 0,28 0,11	12,8-12,9 10,2-10,3 12,1-12,2 10,7-11,0

fintes

(1) when n

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

D11

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## Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,4 e 1

1. Edition

PES 6 P 110 A 720 LS 455

ROV 250-1100 PA 675

supersedes

Komb.-Nr. 0 402 046 284

companyMAN D 2566 MTE 206 kW Bagger

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

3,0-3,1 .95-3,15) Port closing at prestroke mm (from BDC), RW = 9.0-12.0 mm - 7v1Control rod travel Control rod Spring pre-tensioning (torque-control valve) **Fuel delivery** Fuel delivery Rotational speed Difference cm³/ 100 strokes rev/min mm cm<sup>3</sup>/100 strokes mm cm<sup>3</sup>/100 strokes mm 1100 12,1+0, 14,7-14,9 0.4(0.8)250 6.8 - 7.01.0-1.6 0,4(0,7)

Adjust the fuel delivery from each outlet according to the values in [

### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed	•	Sliding	ieeve travef
	rev/min Control rod travel mm	Control rod travel mm rev/min 28	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	0
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 13	100	min.8,6		1,4-1,7
ca. 46	11,1 4,0 1350	1140-1150 1210-1240 0-1,0					250 340-4	7,0-7,2  400 = 2,0	1100	5,0-5,2 7,9
						<b>3</b> a				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		fimitation intermediate speed	high idle s	rery characteristics (5e)	Starting Idle switching	• . •	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
<u>                                     </u>	2	3	4	5	6	7	8	9
1100	147,0-149,0 (144,0-152,0)		•	-	100	225,0-245,0 (221,0-249,0		•

Chucking values in brackets

\* 1 mm less control rod travel then col. 2

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 CAT 10,5 a

1. Edition

PES 6 P 80 A 720 LS 456 RQV 350-1000 PA 609-1

Komb.-Nr. 9 400 087 292

Port-closing test with/without ROBO diaphragm

supersedes

company: Caterpillar engine. 3306 T 150 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at pres		60-1.80)	mm (from BDC)	KW = 9,	0-12,0 mm	
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
990	12,5+0,1	11,1-11,2	0,2(0,35)			
350	6,7-6,9	1,0-1,7	0,2(0,3)			
				I	<u> </u>	

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Upper rated s	peed			Intermediate	rated sp	eed	Lower rated	speed		Sliding e	leeve travel
deflection	Control rod travel	Control rod travel mm rev/min 3	(a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm ( 9	rev/min	mm
max.	1010	15,2-17	8,	-	-	-	ca.17	250 i 350	nin.11,( 5,9-6,		0,5-2,0 2,7-3,1
ca. 69		1020-103 1090-112 0 - 1,0	0				300-400	510-	570=2,0	500	2,5-4,2 6,1-6,6 8,5
							<b>3</b>				

Torque control travel a = 1,0

mп

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil te		Rotational-speed initation intermediate speed	$\smile$	Fuel delin	rery characteristics (5a)	Idle	fuel delivery 6	Torque- travel	control 5
rev/min 1	cm³/1000 strokes .	rev/min 3	$\Theta$	rev/m <del>i</del> n 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	travet mm 9
990	111,0-112,0 (109,5-113,5)	1020-1030	*	500 700	117,0-119,0 (114,0-118,0) 114,5-116,5 (113,5-117,5	100 350	=17,6-18,6 mm RW	990 500 700 850	12,5+0,1 13,5+0,1 13,4+0,2 12,8+0,3

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.84

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## Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 MAN 11,4 c 2. Edition

En

PES 6 P 120 A 720 LS 457 RQ 750 PA 566 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersed 83
companyMAN
engine: D 2566 MLE
198 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

3,0-3,1 Port closing at prestroke mm (from BDCZV1. 6 = RW 9.0-12.0 mm 2.95-3.15) Rotational speed Fuel delivery Control rod **Difference** Control rod Fuel delivery Spring pre-tensioning travel (torque-control valve) cm<sup>3</sup>/ 100 strokes rev/min mm cm<sup>3</sup>/100 strokes mm cm<sup>3</sup>/100 strokes mm 700 12,5+0, 20,2-20,4 0.5(0.9) 250 6.1-6.3 1.5-2.1 0,8(1,2)

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Checking of sli PRG check Contr travel rev/min mm 1	ol rod	Full-load a Setting po rev/min 3		-	rev/min	Idle spec Setting p rev/min 7	Control red travel		cifications 5 Control rod travel	Torque o	Control rod (3)
-	•	-	-	11,5 4,0 900	750-755 776-789 0-1,0	-	•	-	•	•	•

Torque-control travel on flyweight assembly dimension a #

**`** 

Speed regulation: 750-755 min -1

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting t	uel delivery d
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	ed trave cm <sup>2</sup> /1000 strokes / mm 7
700	202,0-204,0 (199,0-207,0)	-	-	•	-	• ·

Checking values in brackets

7.84

BOSCH

2

Testoil-iSO 4113

## Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,4 c 1

1. Edition

En

PES 6 P 120 A 720 LS 457 RQ 750 PA 661 Komb.-Nr. 0 402 046 267 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes \_

company: MAN

engine: D 2566 MLE

198 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

(2.95-3.15)

mm (from BDC)Zy1.6; RW = 9.0-12.0 mm

Rotational speed rev/min	Control rod travel	Fuel delivery  cm³/100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,1	20,2-20,4	0,5(0,8)			
250	6,1-6,3	1,5-2,1	0,8(1,2)			
					j	

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Checking of slide PRG check	<u> </u>	Full-load : Setting po	•	-	cifications (4)	Idle spec	_		cifications (5)	Torque d	control 3
Control travel rev/min mm 1 2	rod C	rev/min 3	red travel rnm	Central red travel main	rev/min	rev/min	Control red travel m.m 8	rev/min 9	Control rod travel mm	rev/min	Control rod travel
-	-	-	•	11,5 4,0 900	750-755 776-789 0-1,0	-	-	-	-	**	-

Torque-control travel on flyweight assembly dimension a =

mm

750 - 755 min-1 Speed regulation: At 1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control tever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting f	uel delivery
rev/min 1	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	ind travel cm <sup>3</sup> /1000 strokes;/ mm
700	202,0-204,0 (199,0-207,0)	- '	-	~	-	•
						•
				ļ		

Checking values in brackets

7.84

D15

## Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,4 d 1

1. Edition

PES 6 P 120 A 720 LS 457 Komb.-Nr. 0 402 046 280

RQV 250-1050 PA 672

MQ1 200 1000

supersedes-

company: MAN

engine: D 2566 MLE

220 kW Schiff

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed	Control rod trevel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1050	11,0+0,1	17,4-17,8	0,5(0,9)			
250	6,3-6,5	1,5-2,1	0,65(0,95	)		<b>-</b>
		:				
			٠			Î

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated :	speed		Intermediate	e rated sp	eed	Lower rated	specd		Stidiog	Stiding steeve travet	
Degree of deflection of control fever	rev/min Control rod travel mm	travel 🐷	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min	Control rod travel mm 3	rev/min	0	
max. ca. 63	1100 10,0 4,0 1350	15,2-17,8 1090-1100 1195-1225 0-1,0	-	-	-	ca. 11	100 250 385-	min.7,9 6,3-6,5 445 = 2,0	350 800 1050	2,0-2,5 6,4-6,6 8,0-8,2	
	1333					<b>3a</b>					

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel deli- high idle s	very characteristics (5a)	igie	fuel delivery 6	Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1050	174,0-178,0 (171,0-181,0)	1090-1100*	•	•	100	285,0-305,0 (281,0-309,0)	-	•

Checking values in brackets

\* 1 mm less control rod travel than col. 2

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,4 d 2

1. Edition

PES 6 P 120 A 720 LS 457

RQV 250-1100 PA 672-1

superstides\_
company: MAN

engine:

Komb.-Nr. 0 402 046 281

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	stroke	2.95-3.15)	mm (from BDC)	mm (from BDC)								
Rotational speed rev/min 1		Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6						
1100	12,0+0,1	19,4-19,8	0,5(0,9)									
250	6,3-6,5	1,5-2,1	0,65(0,95	)								

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed		Sliding a	leeve travel
Degree of deflection of control	Control rod travel	Control rod travel	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		0
lever 1	2 mm	rev/min (28)	lever 4	rev/min 5	mm (4)	lever 7	rev/min 8	mm (3)	rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 11	100	min.7,9	350	2,0-2,6
ca. 64	11,0 4,0 1400	1140-1150 1270-1300 0-1,0					250 385-	6,3-6,5  445 = 2,0	900 1100	6,8-7,0 8,2
						<b>3</b> a				

Torque control travel a = -

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-foad d Controf-ro Test oil ten		limitation intermediate speed	Fuel delic high idle s		Starting Idle switching		Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 4e	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travet mm
1	2	3	4	5	6	7	8	9
1100	194,0-198,0 (191,0-201,0)		-	-	<b>-</b> 250	- 15,0-21,0 (12,0-24,0)	•	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.84

BOSCH

rechâltsbereich KH. Kundendienst. Kfz-Ausrustung. by Robert Bosch GmbH, D-7 Stuttgert 1, Postfach 50, Printed in the Federal Republic of Germ prime en Recublique Federale d'Alemegne par Robert Bosch GmbH.

## Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 PEN 7,0 i 1

1. Edition

En

PE 6 P 110 A 320 RS 465

RSV 200-1200 P 1/305 R

supersedes

Komb.-Nr. 0 401 876 268

company Volvo-Penta TD 70 175 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(7)

3,0-3,1 (2,95-3,15)

mm (from BDC) RW = 9.0-12.0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm //100 strokes 3	Difference cm <sup>-/</sup> 100 strokes 4	Control rod travel mm	Fuel delivery cm*/100 strokes	Spring pre tensioning (torque-control valve) mm
700	2,5+0,1	13,0-13,2	0,4(0,75)			2,5 ±0,1
200	5,4-5,6	1,6-2,2	0,3(0,6)			(2,2-2,9)
	İ					
					·.	

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

1 Uppe	er rated speed		Interme	diate rate	d speed	(4)	Lowe	rated speed	(3) 10	rque control
Degree of deflection of control	Control rod travel mm	Control rod travel mm rev/min				Control- lever deflection	rev/min	Control rod travel mm	rev/min	Control rod travel mm
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 13	200	5,0	-	-
İ	x =	4,25					200	5,4-5,6		
ca. 55	11,5 4,0 1480	1240-1250 1270-1300 0,3-1,7					280-34	0 = 2,0		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

<b>C</b>	ill-load stop	Rotational- speed limitat	Ga Fuel delivery characteristics		Starting (	luel delivery 5	4a) idle stop	
rest oil to	emp 40°C (104°F) cm*/1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm/1000 strokes	rev/min 6	cm / 1000 strokes 7	rev/min 8	Control root travet mm 9
700	130,0-132,0 (127,0-135,0)	1240-1250*	-	-	-	-	•	-

Checking values in brackets

7.84

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Geschaftsbersich KH. Kundendienst. Kfz-Ausrustung 

1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany 
Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

<sup>\* 1</sup> mm less control rod travel than col 2

## ①

## Test Specifications Fuel Injection Pumps ① and Governors

NPP 001/4 RVI 14,9 c 2. Edition

PES 8 P 120 A320 RS 466 RQV 275-1050 PA 665 1-8-4-2-7-3-6-5 je  $45^{\circ}\pm0.5^{\circ}$  ( $\pm$  75°) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 14 company I MIVS 083530 engine 268 KW Komb.-Nr.0 402 048 042

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

2.8 - 2.9

### A. Fuel Injection Pump Settings

Port closing mark 13° after port closing cylinder 1

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1950	9,6-9,7	19,2-19,4	0,5(0,9)			
275	3,5-3,7	1,7- 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Upper rated	speed		Intermedi	ate rated sp	eed	Lower rated	speed		Sliding	sleeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	mm	Degree of deflection of control lever	) [	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min	Control rod travel mm 3		ı O
max.	1150	15,2-17,8	-	-	-	ca.8	200	min. 5,2	275	1,5-1,6
ca.63		1105-1115 1175-1205 0-1,0					275 275-3	3,5-3,7 325= 2,0	650	3,1-3,4 4,0-4,5 5,0-5,2
			_[	1		<b>3</b>		1	050	7,7

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed 2b timitation intermediate speed	ion thigh idle speed (a) title .		Torque- travel	control 5		
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 49	rev/min 4	cm <sup>3</sup> /1000 strokes	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9
LDA 1050	0,9 bar 192,0-194,0 (189,0-197,0)	1105-1115*	LDA 500	0 bar 119,0-121,0 (116,0-124,0)	100	140,0-160,0   136,0-164,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator

500 rev/min decreasing pressure – in bar gauge pressure diminution Control rod travel Pump/governor Setting Measurement difference Gauge pressure = bar Gauge pressure = bar mm (1) 9,6 - 9,7 7,7 - 7,8 9,0 - 9,1 8,1 - 8,3 0,90 PES8P..RS 466 0 0,30 0,26 +ROV...PA 665

**Notes** 

(1) when n

rev/min and gauge pressure

bar ( maximum full-load control rod travel)

RVI 14,9c

-2-

## Test Specifications Fuel Injection Pumps (A) and Governors

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WPP 001/4 MWM 10,8 a 1. Edition

Er

PE 6 P 120 A 320 RS 468 RSUV 300-750 P 10 A 320 1-6 - 3- 2 - 5 - 4 0-90-120-210-240-330°+0,5°(+0,75°)

supersedes company MWM PROMD.-Nr. 0 401 876 278

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers apply to test nozzle-and-holder

A. Fuel Injection Pump Settings assembly 1 688 901 019 and fuel-injection test

Port closing at prestroke

(2,75-2,95)

tubing 1 680 750 067

Rutational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	2	cm /100 strokes 3	100 strokes 4	mm 2	cm <sup>1</sup> /100 strokes 3	6 6
750	9,4-9,5	14,3-14,7	0,5(0,9)		•	
300	6,2-6,4	2,8-3,6	0,8(1,2)			
			•			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

1 Uppe	r rated speed	rev/min	Interme	ediate rate	ed speed	(4)	Lower	rated speed	(3) 10	rque control
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm '	rev/min	Control rod travel mm
loose	800 x=	0,3-1,0 4,0	-	-	٠	ca.26	300 300	5,8 6,2-6,4	750 320	9,4-9,5 10,6-11,2
ca.55	8,4 4,0 950	790-800 800-830 0,3-1,7					325-38	<b>5=2,0</b>	450	9,4-9,5

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor.

<b>6</b>	ell load stop	6 Rotational- speed limitat  3a Fuel delivery characteristics			Starting f	Starting fuel delivery 5 4a		
Test oil to rev/min 1	cm //1000 strokes 2	Note changed to 1 rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	Control rod travel mm
750	143.0-147.0 (140.0-150.0)	790-800*	-	-	100	260,0-290 =15,8-16,0 mm RW		•

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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## **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 MWM 10,8 a 1 1. Edition

PE 6 P 120 A 320 RS 468

RSUV 300-1150 PO A 324 DR

1- 6- 3 - 2- 5 - 4 0-90-120-210-240-330°+0,5°(+0,75°) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes MWM company

D-TBD 234 V6

ଂଝିର୍ଲb.-Nr. 0 401 876 271

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

1.

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(2,75-2,95)

mm (from BDC)

Rotational speed rev/min	Control rod travel	Fuel delivery	Difference cm·/ 100 strokes	Control rod travel	Fuel delivery	Spring pre-tensioning terque-control valves
1	2	3	4	2	cm <sup>1</sup> /100 strokes	mm 6
1150	9,4-9,5	14,3-14,7	0,5(0,9)			
300	6,2-6,4	2,8-3,6	0,8(1,2)			-
				ŀ	•	

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

1) Uppe	er rated speed		Interme	diate rated	d speed	4	Lower	rated speed	(3) 10	3 Torque control		
Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm	rev/min	Control rod travel mm		
loose	800	0,3-1,0	-	-	-	ca.24	300	5,8	-	-		
	x=.	4,0					300	6,2-6,4				
ca.56	8,4 4,0 400	1190-1200 1230-1260 0,3-1,7					400-46	<b>y=</b> 2,V				

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

9	ill-load stop	6 Rotational speed limital	Ga Fuel delivery characteristics		Starting (	Starting fuel delivery 5		4a Idle stop	
rev/min	cm <sup>1</sup> /1000 strokes	Note changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min	cm/1000 strokes 7	rev/min 8	Control rod travel mm 9	
	143,0-147,0 140,0-150,0)	1190-1200*	-	-	100	260,0-290, =15,8-16,0		<b>-</b> .	
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Checking values in brackets

\* 1 mm less control rod travel than col. 2

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estcil-ISO 411

WPP 001/4 MAN 11,9 a 4 1. Edition

PES 6 P 120 A 720-LS 470 RQ 250/1100 PA 658-9 Komb.-Nr. 0 402 046 308 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

MAN D 2866 KUH 265 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
2,8-2,9
Port closing at prestroke (2,75-2,95) m

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (forque-control valve) mm 6
750	12.5+0.5	23.8-24.0	0,5(0,9)			
250	5,2-5,4	1,2-1,8	0,8(1,2)			
	]					
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			_ i	ļ		İ

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Checkin PRG che	· · · · · · · · · · · · · · · · · · ·	Full-load Setting p	oint	Test spe	cifications (4)	idle spe Setting (	ed regula point		cifications (5)	Torque	control 3
rev/min 1	Control rod travel mm 2	rev/min 3	Central red travel mm 4	Centrel red travel rnm 5	rev/min 6	rev/min 7	Control rad travel	rev/min 9	Control rod travel	rev/min 11	trave;
600 VH=	19,2-20,8 max.46°	600	20,0		1145-1160 1180-1210 0-1,0	250		250	min.6,8 5,2-5,4 55=2,0	100	12,5-12,6 11,3-11,4 12,4-12,6 11,7-12,0

Torque-control travel on flyweight assembly dimension a = 0,65 mm.

Speed regulation: At 145-1160 min-1

1 mm less control

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever pp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting I	tuel delivery 6
rev/min	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes:/ mm
LDA 750 LDA 1100	1,0 bar 238,0-240,0 (235,0-243,0) 1,0 bar 213,0-219,0 (210,0-222,0)	•	LDA 650 LDA 500	1,0 bar 239,0-245,0 (236,0-248,0) 0 bar 139,0-141,0 (136,0-144,0)		225,0-245,0 221,0-249,0)
N akia a	Shore in Prochets					

ng values in brackets

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## D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9 a 4

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel- difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1) .
PES 6 P LS 470 +RQ PA 658-9	1,0	0 0,40 0,24	12,5-12,6 9,3-9,4 11,1-11,2 10,2-10,6

Notes

(1) when n

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

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# Test Specifications Fuel Injection Pumps ② and Governors

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WPP 001/4 MAN 11,9 a 3. Edition

En

PE 6 P 120 A 720 LS 470 RQ 250/1100 PA 684 Komb.-Nr. 0 402 046 288 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersede 7 • 84

Company: D 2866 KF

engine 265 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,8 - 2,9 (2,75-2,95)

mm (from BDC)Zy1. 6: RW = 9.0-12.0 mm

		(2,70 2,00)		- <b>J</b> , .		
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,1	23,8-24,0	0,5(0,9)			
250	5,2-5,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Test specifications   Control rod   Test specifications   Test specifications   Test specifications   Test specifications   Test specifications   Test specifications   Test specifications   Test specifications   Test specifications   Test specifications   Test specifications   Test specifications   Test specifications   Test specifications   Test specifications   Test specifications   Test specifications   Test specifica		g of slider	Full-load	speed re	gulation	_	idle spe	ed regula	ation	_	Torque	control
VH $\frac{1}{250}$ $\frac{1100}{1300}$ $\frac{1180-1210}{0-1,0}$ $\frac{1100}{315-355}$ $\frac{1100}{250}$ $\frac{11}{250}$ $\frac{1100}{11}$	-	Control rod		Control rad travel	Central rad travel	رب, ا		Centrel red travel		Control rod travel mm		travel mm
		19,2-20,8 = max. 46°	600	20,0	4,0	1180-1210		5,3	250	5,2-5,4	1100 935	11,3-11,4 12,4-12,6

Torque-control travel on flyweight assembly dimension a =

,45 <sub>mm</sub>

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	delivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting fuel delivery Idle speed		
rev/min	cm³/- 1000 strokes 2	rev/min 3	rev/min 4	cm³/~1000 strokes 5	rev/min 6	Central rad travel cm <sup>3</sup> /1000 strokes:/ mm	
LDA 750 LDA 1100	1,0 bar 238,0-240,0 (235,0-243,0) 1,0 bar 214,0-218,0 (211,0-221,0)	-	LDA 650 LDA 500	1,0 bar 239,0-245,0 (236,0-248,0) 0 bar 139,0-141,0 (136,0-144,0)	100	225,0-245,0 (221,0-249,0)	

Checking values in brackets

9.84

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## D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9 a

- 2 -

Test at n =

500 rev/

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE6PLS470 + RQPA684	1,0	0 0,40 0,11	12,5 - 12,6 9,3 - 9,4 11,1 - 11,2 9,4 - 9,7

Notes

(1) when n

rev/min and gauge pressure =

bar (~ maximum full-load control rod travel)

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 MAN 11,4 f 1. Edition

En

PES 6 P 100 A 720 LS 471 Komb.-Nr. 0 402 046 287

RQ 250/1100 PA 685

supersedes\_

company: MAN

engine:

D 2566 UH/200

147 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(3,05-3,25)

mm (from BDG) RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Oifference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,3+0,		0,35(0,6)			
250	4,9-5,1	1,2-1,8	0,35(0,59	)		
			·	!		·
i I						

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Checkin PRG che	ig of slider ick Control rod	Full-load Setting p	oint	Test spe	cifications (4)	idle spe Setting	point		ecifications (5)	Torque	(3
rev/min 1	travel	rev/min	Control red travel rnm 4	Centrel red travel rnm 5	rev/min 6	rev/min 7	red travel mm 8	rev/min 9	Control rod travel mm 10	rev/min	travel
600	15,6-16,4	600	16,0		1145-1160 1215-1245 0-1,0	250	5,0	250	min.6,5 4,9-5,1 80=2,0	700 100	12,4-12,5 12,3-12,5

Torque-control travel on flyweight assembly dimension a =

---

Speed regulation: At 1145-1160 min<sup>-1</sup>

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	2	Control rod stop 3a	Fuel deliv	ery characteristics	Starting (	tuel delivery
rev/min	cm <sup>3</sup> /-1000 strokes 2		rev/min 3	rev/min 4	cm <sup>3</sup> /~1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes:/ mm
750	94,0-96,0 (92,0-98,0)	É	•	500 1100	85,0-88,0 (82,5-90,5) 100,0-104,0 (97,5-106,5)	100	115,0-135,0 (111,0-139,0)

Checking values in brackets

7.84

**BOSCH** 

## Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 UNI 9.6 c 1. Edition

<u>En</u>

PES 6 P 110 A 320 RS 472 Komb.-Nr. 0 402 046 292

RQ 275/1300 PA 689

supersedes

company: IVECO-Unic engine: 8220-12

148 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection, Rump Settings

Port closing at prestroke

(2,15-2,35)

mm (from BDC) RH=9.0-12.0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Conirol rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300 275	8,9-9,0 4,2-4,4	9,6-9,9 1,5-2,0	0,4(0,75 0,45(0,79			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Checkin PRG che	g of slider ock Control rod	Full-load speed regulation Setting point Test specifications Central Central			cifications (4)	idle spec	point	ation Test spe	Torque control		
rev/min	travel	rev/min 3	red travel rnm 4	red travel mm 5	nev/min 6	rev/min 7	Central red travel mm 8	rev/min 9	Control rod travel mm	rev/min 11	travel
600	15,6-16,4	600		7.9 4.0 1500	1345-1360 1400-1430 0-1,0	275	4,3	275	min.5,8 4,2-4,4 75=2,0	700 865	8,9-9,0 9,2-9,3 9,1-9,3 8,9-9,2

Torque-control travel
on flyweight assembly dimension a =

2 \_\_\_

Speed regulation: At 1345-1360 min

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	2	Control rod stop	Fuel deliv	very characteristics	36)	Starting (	fuel delivery
rev/min 1	cm³/-1000 strokes 2		rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5		rev/min 8	rad travel cm <sup>3</sup> /1000 strokes;/ mm 7
1300	96,0-99,0 (93,5-101,5)		-	700	87.0-91.0 (84.0-94.0)		100	145,0-165,0 (141,0-169,0)

Checking values in brackets

7.84

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Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
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## **Test Specifications** Fuel Injection Pumps (2) and Governors

WPP 001/4 MB 11,6 a 1 1. Edition

PE 6 P 100 A 720 RS 473 Komb.-Nr. 0 401 846 494

RO 300/1100 PA 327-8

Daimler-Benz OM 355

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDQ) RW=9.0-12.0 mm

Rotational speed rev/min	Control rod travel	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100 300	13,1+0, 7,9-8,		0,35(0,6) 0,35(0,55			
						·

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Checkin PRG che rev/min 1	Control rod travel	Full-load : Setting po rev/min 3	•	-	rev/min	idle spec Setting p rev/min 7	coint Central red travel		cifications 5 Control rod travel mm	Torque ( rev/min î 1	Control rod (3)
650	13,8-14,6	650	14,2		1145-1160 1190-1220 0-1,0	300	6,1	300	min.7,5 6,0-6,2 370=2,0	-	•
on flywei	ontrol travel ght assembly dimer		-	mm	_•	ed regula	11	45-11	60 <sub>,</sub> min <sup>-1</sup>		1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop	Fuel deli	very characteristics 3b	Starting did spec	fuel delivery
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5 .	rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ mm
1100	125,0-127,0 (123,0-129,0)	-	600	117,0-121,0 (114,0-124,0)	100	150,0-170,0 (146,0-174,0)

Checking values in brackets

(i)

## Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8.8 L 1. Edition

En

PE 6 P 120 A 320 RS 474 RQV 275-1200 PA 425-3 Komb.-Nr. 0 401 846 499 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

compan RVI
MIDS 0620 30
engine: 168 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

 Control rod travel	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel	Fuel delivery  cm³/100 strokes	Spring pre-tensioning (torque-control valve)/ mm 6
12,6+0,1 6,0-6,2	14,8-15,0 0,8-1,4	0,5(0,9) 0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated	speed			ate rated sp	eed	Lower rated	speed		Sliding	sleeve travel
Degree of deflection of control lever	rev/min Control rod travel mm 2	(1876)	Degree of deflection of control lever		Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	ı ①
max.	1230	15,2-17,	8 -	-	-	ca. 12	200	min.9,1		1,2-1,4
ca.65	11,6 4,0 1500	1265-127 1380-141 0-1.0	•			275-360	275	6,0-6,2		2,9-3,4 5,8-6,0 7,9
				<u> </u>		<b>3</b>				

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b timitation intermediate speed	Fuel delic high idle s	very characteristics (5e)	Starting idle switchi:	• . •	Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1200	148.0-150.0. (145.0-153.0)		750	137,0-143,0 (134,0-146,0)		105,0-125,0 (101,0-129,0)	-	-
1200	0,7 bar		750	0,7 bar		٥		
					į			
L					<u> </u>			

Checking values in brackets

\* 1 mm less control rod travel then col. 2

## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure ~ in bar gauge pressure

RVI 8,8 1

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 6 P RS 474 + RQVPA 425-3	0,70	0 0,20 0,16	12,6 - 12,7 11,3 - 11,4 12,3 - 12,4 11,6 - 11,8
		•	

Notes.

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

## **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 MAN 11,4 g 1. Edition

PES 6 P 110 A 720 LS 477 RQ 250/1100 PA 685 Komb.-Nr. 0 402 046 304

MAN company:

D 2566 UH/200

177 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(3.05-3.25)

mm (from 8DC)Zy1. 6

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800 250		12,3-12,6 1,5-2,0	0,4 (0,7) 0,45(0,7)			
			·			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Checkin PRG che	xx (1)	Full-load : Setting po		-	cifications (4)	idle spe Setting	ed reguli		cifications (5)	Torque (	control 3
rev/min	Control rod travel mm 2	rev/min 3	Control red travel rnm 4	Control red travel mm 5	rev/min 6	rev/min 7	Central red travel rmm 8	rev/min 9	Control rod travel mm	rev/min 11	travel
600	15,6-16,4	600		10,7 4,0 1350	1145-1160 1210-1240 0-1,0	250	6,1	250	min.7,6 6,0-6,2 410=2,0	1100 500	11,7-11,8 11,7-11,9

Torque-control travel on flyweight assembly dimension a =

Speed regulation: A145-1160 min-1

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting to	duel delivery
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes	rev/min 6	cm <sup>3</sup> /1000 strokes/ mm
800	123,0-126,0 (120,5-128,5)	•	1100 500	127,0-133,0 (124,0-136,0) 113,0-119,0 (110,0-122,0)	100 250	110,0-130,0 (106,0-134,0) 15,0-20,0 (12,5-22,5)

Testol-1SO

1. Edition

PE 5 P 120 A 720 RS 480 RO 250/1100 PA 269 R 1-2-4-5-3 je 72 ° + 0,5 ° (+ 0,75 °) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

company Mercedes-Benz Bras.
OM 355-5 O Komb.-Nr. 9 400 087 311

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings 1,9-2,0 Port closing at prestoke (1,85-2,05) m

mm (from 806) RW = 9.0-12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
r <del>ev/min</del> 1	mm 2	cm <sup>3</sup> /100 strokes	100 strokes	mm 2	cm <sup>3</sup> /100 strokes	mm 6
1100	12,2+0,1	20,1-20,3	0,5 (0,9			
250	5,9-6,1	1,3-1,9	0,8 (1,2			
		·				
			· ·			
						ſ

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Control rod   Travel   Trave	Checking PRG che	g of slider ck (1)	Full-load : Setting po		-	cifications (4)	idle spec	•		cifications (5)	Torque	control 3
4,0 1190-1220   250   5,9-6,1		travel	rev/min 3	red travel	red travel	rev/min 6	rev/min 7	red travel		Control rod travel mm	rev/min	travel mm
	600	15,6-16,4	600	16,0	4,0	1190-1220		6,0	250	5,9-6,1	•	•

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel injection Pump with Fitted Governor

	elivery on ontrol lever pp. 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics 3b	Starting fuel delivery Idle speed		
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ mm	
1100	201,0-203,0 (198,0-206,0)	450	500	202,0-208,0 (199,0-211,0)	100	335,0-355,0 =17,6-18,6 mm RW	

icking values in brackets

7.84

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
€ 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 3. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

Testoil-ISO 411

## **Test Specifications** Fuel Injection Pumps 2 UPP 001/4 MB 9,6 a and Governors

9. Edition

PE 6 P 100 A 320 LS 805

300/1250 PA 197 P (1) ROV 300-1250 PA 227 R (2) supersedes 7.83 company: Daimler Benz OM 401

6 - 3 - 5 - 2 - 4 - 1 0 -45 -120-165-240-285 -0,5°(±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,0+0,	1 10,6 - 10,8	0,3(0,6)			
300	7,9-8,1	1,9 - 2,5	0,3(0,7)			·

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

RQ.. 187 R (1)

Checkin	( , ,	Full-load speed regulation Setting point   Test specifications (			cifications (4)	Idle spec	•		cifications (5)	Torque control		
rev/min 1	Control rod travel mm	rev/min 3	red travel rmm 4	Central red travel rnm 5	rev/min 6	rev/min 7	Control red travel mm 8	rev/min	Control rod travel mm	rev/min 11	Control rod (travel)	
650 1450	13,8-14,6 0 - 1	650	14,2	10,0 4,0	1295-1310 1330-1360		8,0	300 420-	min. 9,5 7,9-8,1 450 =2,0	1250 600	11,1-11,2 11,1-11,3	
								500	0 - 1			

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control

## C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever op. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting f	uel delivery d
rev/min	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/~1000 strokes 5	rev/min 6	nd travel cm <sup>3</sup> /1000 strokes:/ mm 7
(1) 1250	107,0 - 109,0 (105,0 - 111,0)	600	600	85,0 - 90,0 (83,0 - 92,0)	100 1355	110 - 130 Streug. max.4 (6)

**B. Governor Settings** 

RQV.. 227 R (2)

Upper rated s	peed			Intermediate	ed	Lower rated	speed	Sliding sleeve travel			
deflection of control	rev/min Control rod travel mm 2	Control rod travel mm rev/min ( 3		Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3 9		mm 11
max.	1290	15,2-17,	8	-	-	•	ca. 12		min.9,5 7,9-8,1		0,2-0, 3,0-3,
ca. 66	4,0	1290-13 1330-13	60						,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	920 1250	5,1-5,
	1450	0 - 1	,0				325 <b>-</b> 450				

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fixed Governor

Full-load d Control-ro Test oil ten		Rotational-speed (2b) limitation intermediate speed	Fuel deln characte high idle	ristics	Starting Idle switchir	fuel delivery 6	Torque- travel	Control cod
rev/min	cm³/1000 strokes	 rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm //1000 strokes 1 7	rev/min	travel mm 9
(2) 1250	106,0-108,0 (104,0-110,0)		600	83,0 - 88,0 (80,0 - 92,0)	S	110 - 130		
					100-	 -250 (80-270)		

Checking values in brackets

Testoil-ISO 4113

\* 1 mm less control rod travel than co: 2

## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm

En

## Test Specifications Fuel Injection Fumps (A) and Governors

40

WPP 001/4 IHC 13,4 e 1
1. Edition

En

PES 6 P 110 A 420 LS 3037

RSV 350-1050 P2/423 UR

company UT1-817 C

engine

Komb.-Nr. 0 402 076 708

Values only apply to test nozzle-and-holder assembly 1 688 901 016 and fuel-injection test tubing 9 681 271 027

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Inlet pressure 2,8 bar

Port closing at prestroke

2,0-2,1 (1,95-2,15)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>1</sup> /100 strokes	cm <sup>-/</sup> 100 strokes 4	mm 2	cm //100 strokes	mm 6
1050	11,5+0,1	20,5-20,7	0,4			
350	4,6-4,7	2,0-2,5				7

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

(1) Uppe	er rated speed	l rev/min	Interm	ediate rate	ed speed	(4)	Lower	rated speed	(3) 10	rque controt
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-	-	-	ca.23	100	** 20,0-21,0		11,5-11,6 12,6-12,7 12,9-13,0
ca.45	10,5 4,0 1300	1090-1100 1145-1175 0,3-1,7					200 350 360-42	11,0-21,0 4,6 0 = 2,0	730	12,5-10,0

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational Sa Fuel delivery characteristics			Starting I	fuel delivery 5	(a) Idle stop		
Test oil to rev/min 1	emp 40°C (104°F) cm /1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm v1000 strokes 5	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	Control rod travel mm	
LDA 1050	0,8 bar 205,0-207,0 (203,0-209,0)	1090-1100*	LDA 750 LDA 800	0,8 bar 225,0-231,0 (223,0-233,0) 0 bar 145,0-153,0 (142,0-156,0)	100 350	185,0-205, 20,0-25,0	]	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

With control lever in end position: increase speed until 4 mm control-rod travel is reached. Then adjust idle spring so that it makes contact and screw out by one turn.

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung
1980 by Robert Bosch GmbH, Postfach 50. D-7000 Stultgart 1. Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

## D. Adjustment Test for Manifold Pressure Compensator

IHC 13,4 e 1

. 2 -

Testatn =

800

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure : bar	Gauge pressure = bar	mm (1) .
PES6PLS3037 + RSVP2/423UR	0,18-0,24	0,56-0,58	Control-rod travel aspiration + 0,5 mm Full-load control-rod travel - 0,5 mm

Notes

(1) when n

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 MWM 39,8 c . 3. Edition

En

1) PE 6 P 130 A 300 LS 305T (2) PE 6 P 130 A 320 LS 3052

RSUV 300-750 P9A 332/1 R

supersedes 1.83 MWM-Südbremse company

(3) PE 6 P 130 A 300 LS 3052

TBD 602-V 12 K

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test Komb.-Nr. 0 401 816 703 (1) 0 401 876 711 (2)

tubing 1 680 750 067 Fuel Injection Pump Test Benches and Testers

0 401 816 705 (3)

## A. Fuel Injection Pump Settings Cam sequence and angular cam spacing, Instructions 2

Port closing at prestroke

(2,75-2,95)

mm (from BD&W = 19,5-22,5 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm //100 strokes	cm <sup>1</sup> / 100 strokes	mm	cm /100 strokes	mm 6
700	12,0+0,1	(31,4-32,4)	(0,5)	2	3	
300	5,4-5,6	4,6-5,4	0,8 (1,2)			
	,	<b>.</b>	· .			

Adjust the fuel delivery from each outlet according to the values in

## **B**. Governor Settings

•		Interme	ediate rated	t speed	(4)	Lower	•	(3) 10	rque control
Control rod travet	Control rod travel				Control- lever		Cofitrol rod travel		Control rod travel
mm	mm rev/min				deflection in degrees	rev/min	mm _	rev/min	mm
2	3	4	5	6	7	8	9	10	11
800	0,3-1,0	-	-	•	ca. 29	300	4,9	700 325	12,0-12,1 13,2-13,8
X =	5,25				İ	300	5,3-5,5	450	12,0-12,1
11,0	790-800	1				325-385	= 2,0		ļ
4,0 980	815-845 0,3-1,7								
	Control rod travel mm 2 800 x = 11,0 4,0	mm mm rev/min 2 3  800 0,3-1,0  x = 5,25  11,0 790-800 4,0 815-845	Control rod travel mm mr rev/min  2	Control rod travel mm rev/min 2 3 4 5  800 0,3-1,0   x = 5,25  11,0 790-800 4,0 815-845	Control rod travel travel mm rev/min 2 3 4 5 6  800 0,3-1,0	Control rod travel mm rev/min 2 3 4 5 6 Control lever deflection in degrees 7	Control rod   Control rod   travel   mm rev/min   2   3   4   5   6     Control   travel   mm rev/min   2   3   4   5   6   7     Rev/min   Rev/	Control rod   Control rod   travel   mm rev/min   2   3   4   5   6     Control rod   travel   mm rev/min   2   3   4   5   6   7     Control rod   travel   mm rev/min   mm rev/min   8   9   9	Control rod travel mm rev/min   2   3   4   5   6   Control rod travel mm rev/min   2   3   5   6   7   Control rod travel mm rev/min in degrees   8   9   10

The numbers denote the sequence of the tests

without (1 u. 3) and

### C. Settings for Fuel Injection Pump With Fitted Governor

(2b) Fu	ill-toad stop	Rotational- speed limitat	(3a) f	uel delivery haracteristics	Starti <b>ng</b> (	Starting(t)(e) delivery (5) (4a) idie st			
Test oil id rev/min 1	emp 40°C (104°F) cm/1000 strokes 2	Note changed to ) rev/min 3		cm <sup>1</sup> /1000 strokes	rav/min	900/\$909/x509/x5	rev/min 8	Control root travel mm	
•,		790-800*			100	19,5-21,0	-	-	
he fu nspec	ll-load delive tion sheet. Pu	ry is adjustemps (1) and (	d on 2) or	the engine in a	accordar perate	ce with th n tandem.	e engi	ine	

Checking values in brackets

\* 1 mm less control rod travel than col 2

5.84

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. v. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

Cam sequence and angular cam spacing.

1- 5- 3 - 4 - 2 - 6 (1)  
0-15-120-135-240-255° 
$$\stackrel{+}{=}$$
 0,5° ( $\stackrel{+}{=}$  0,75°)

1- 6- 2 - 4 - 3 - 5 (2 u. 3)  
0-15-120-135-240-255° 
$$\pm$$
 0,5° ( $\pm$  0,75°)

WPP 001/4 VOL 10,0 q 5

1. Edition

PE 6 P 110 A 320 RS 3108 RQV 325-1100 PA 232

Komb.-Nr. 0 401 846 753

company. Volvo-BM TD 100 G

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

troke	2.95-3.15)	mm (from BDC)			
Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
11,5+0,1	14,8-15,0	0,4(0,8)			
3,9-4,1	1,6-2,0	0,3(0,6)			
Ì					
	Control rod travel mm 2 11,5+0,1	Control rod travel  mm	Control rod travel	Control rod travel	Control rod   Fuel delivery   Difference   Control rod   Fuel delivery   Cm³/100 strokes   2   11,5+0,1   14,8-15,0   0,4(0,8)

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated	speed		Intermediate	e rated sp	eed	Lower rated	speed		Stidings	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min 2a	deflection of control	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	0
<u> </u>	2	3	4	5	6	7	8	9	10	11
max.	1175	15,2-17,8	-	-	_	ca. 11	100 325	min.6,0 3,9-4,1	275 550	,2-1,4 3,3-3,8
ca. 44	10,5 4,0 1350	1140-1150 1220-1250 0-1,0						400=2,0	825 100	3-5,6 8 <b>,</b> 0
						<b>3</b>				

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roa Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel delichigh idle s	very characteristics (5a)	Starting Idle switchli		Torque- travel	Control Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 49	rev/min 4	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
LDA 700	0,75 bar 148,0-150,0 (145,0-153,0		LDA 700	0 bar 114,0-118,0 (111,0-121,0)	100	170,0-200,0 =20,0-21,0 mm RW	•	-

Checking values in brackets

\* 1 mm less control rod travel then col. 2

## D. Adjustment Test for Manifold Pressure Compensator

VOL 10,0 q 5

- 2 .

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure bar	Gauge pressure : bar	mm (1)
PE 6 PRS 3108 +RQVPA 232	0,75	0 0,46 0,34	11,6-11,7 9,7-9,8 11,1-11,2 10,3-10,5

Notes

(1) when n

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

①

## Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 18,3 d

4 . Edition

oil-1SO 4113

PE 10 P 110 A 320 LS 3818

RQV 300-1150 PA 486-2

supersod@.84 companyDaimler-Benz OM 423 engine: 261 kW (355 PS)

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4 0 - 27 - 72 - 99 - 144 - 171 - 216 - 243 - 288 - 315° - 0,5° (-0,75°)

Komb.-Nr. 0 401 849 706

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres	troke	3.95-4.15)	mm (from BDC)	Zy1. 10		
		Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min t	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes	mm 2	cm <sup>3</sup> /100 strokes	mm 6
1150	12,1+0,1	12,4- 12,6	0,4(0,8)			
300	8,5-8,7	1,4 - 2,2	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated	speed	•		Intermediate	rated sp	eed	Lower rated	speed		Citize a	
Degree of deflection of control lever	rev/min Control rod travel mm 2	(LEAG)		Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	mm
max.	1200	15,2-17,	8	•	-	-	ca. 19	100	min.10,2	250	1,0-1,2
ca. 65	11,1 4,0 1400	1190-120 1240-127 0 - 1,	00				330-470	300	8,5-8,7	550	3,4-3,7 4,9-5,3 7,6
							<b>3</b>				

Torque control travel a = 0,5 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter	letivery d stop mp. 40°C (104°F) (2)	Rotational-speed 2b timitation intermediate speed	Fuel deli- high idle :	very characteristics (Se	Starting Idle switching	. •	Torque- travel	Control cod
rev/min 1	cm³/1000 strokes	rev/min 40	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel
1150	124,0-126,0 (121,5-128,5)	1190-1200 *	600	110,0-114,0 (107,0-117,0)	100	140,0-160,0 (136,0-164,0	600	12,1+0, 12,5+0
			900	11 8,0-125,0 (115,0-126,0)			900	12,4+0.
	luga in brackete							

Checking values in brackets

\* 1 mm less control rod travel than col. 2

WPP 001/4 MAC 10,9 c 1. Edition

En

US-PES 6 P 120 A 720/3 RS 6008 US-ROV 300/500-1050 PA

Komb.-Nr. 9 400 231 181

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

companyMack engine: EE6-335 250 kW

Note VDT-I-MAC 002!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3, 15-3, 35) mm (from BDC)

PLE-Maß=0,740"-0,820"

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	14,0+0,1	25,9-26,1	0,5(0,9)			
300	5,8-6,0	13,0-13,1	0,25(0,4	5)		

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Upper rated	speed	•	Intermediate	e rated sp	eed	Lower rated	speed		Sudia -	la ava dasval
Degree of deflection of control lever	rev/min Controt rod travel mm 2	Control rod (ta travel mm (28)	of control	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	mm
max.	1120	15,2-17,8	-	-	-	ca.20	250	9,8-11,3		
ca.63		1090-1100 1195-1225 0-1,0					300 400 710-7	7,9-8,1 3,8-5,2 70=2,0		
						<b>③</b>				-

forciue control travel a =

man

## C. Sattings for Fuel Injection Pump with Fitted Governor

Full-load ( Control-ro Test oil te		Rotational-speed (2b) limitation intermediate speed	Fuel deli- high idle :	very characteristics 58	Idle	fuel delivery 6	Torque- travel	control 5
rev/min 1	cm <sup>3</sup> /:000 strokes	rev/min 40 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9
1050	259,0-261,0 (256,0-264,0)	1090-1100*	800 600	219,5-225,5 (216,5-228,5) 212,5-218,5 (209,5-221,5)		120,0-180,0	1050 1000 900 700 500	

Chucking values in brackets

\* 1 mm less control rod travel than col. 2

7.84

BOSCH

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4)

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 SCA 11,0 z

1. Edition

PE 6 P 120 A 720 RS 7013 Komb.-Nr. 9 400 087 303

ROV 200-1000 PA 715

supersedes

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

compenSaab-Scania Brasilien engine: DSE 11

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

5,0-5,1 (4,95-5,15) Port closing at prestroke

mm (from BDC) RW = 9.0-12.0 mm

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod trave! mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	15,0+0,1	26,8-27,0	0,6 (0,9)			3,3 <sup>±</sup> 0,1
225	5,4-5,6	4,3-4,7	0,3 (0,6)			(3,0-3,5)

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Upper rated s	peed	•	Intermed	iate rated sp	eed	Lower rated	speed	•	Sliding	leeve travel
deflection	Control	travel C	Degree of deflection	n [	Control rod travel	Degree of deflection		Control rod travel		<u> </u>
	rod travel mm	rev/min	of contro lever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1000	15,2-17,8	-	-	-	ca. 12	225	min.6,9 5,4-5,6		
ca. 62	14,0 4,0	1040-105 1170-120					370-	430=2,0		
l	1300	0-1,0				225 - 365				
						<b>3</b>				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil to		limitation		Fuel delivery characteristics (5a) high ide speed (50)		fuel delivery 6	Torque- travel	Control Control
rev/min	cm³/1000 strokes	rev/min 40	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
700	268,0-270,0 (265,0-273,0	1040-1050* )	1000	260,0-268,0 (257,0-271,0)		300,0-350,0 20,0-21,0 mm RW	•	<del>-</del>

Checking values in brackets

\* 1 mm less control rod travel than cot. 2

8.84

BOSCH

WPP 001/4 SCA 14,2 f

1. Edition

<u>\_En</u>

PE 8 P 120 A 920/4 LS 7014 RQV 250-1000 PA 716 Komb.-Nr. 9 400 087 304 1-2-7-3-4-5-6-8 je  $45^{\circ} \pm 0.50^{\circ} (\pm 0.75^{\circ})$  Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067 All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes
compaSpab-Scania Brasilien
engineDSE 14

A. Fuel Injection Pump Settings 5,0-5,1

Port closing at pret	troke	(4.95-5.15)	mm (from BDC)	RW = 9,	0-12,0 mm			
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6		
700	15,0+0,1	26,8-27,0	0,6(0,9)			3,3 <sup>±</sup> 0,1		
225	5,4-5,6	4,3-4,7	0,3(0,6)			(3,0-3,5)		

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated	speed	•	Intermediate	rated sp	eed	Lower rated	speed	•		Sliding s	leeve travel
Degree of deflection of control lever	rod travel	Control rod ta travel mm rev/min 2a	Degree of deffection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control root travel mm	<b>3</b>		mm 11
max.	1000	15,2-17,8	-	-	-	ca.12		min.6,9	1		7····
ca.62	14,0 4,0 1300	1040-1050 1170-1200 0 - 1,0				225-365	370-4	5,4-5,6 30= 2,6		·	
						<b>3</b>					

Torque control travel a = \_\_\_ mn

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten	elivery d stop np. 40°C (104°F) 2	Rotational-speed 2b limitation intermediate speed	Fuel deli- high idle s	rery characteristics (5a) peed (5b)	Starting fuel delivery 6 idle switching point		Torque- travel	control (5)
rev/min	cm <sup>3</sup> /1000 strokes .	rev/min 40	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm :
1	2	3	4	5	6	7	8	9
700	268,0-270,0 (265,0-273,0		1000	260,0-268,0 (257,0-271,0)	100	300-350 = 20,0-21,0 mm R₩	-	•

Checking values in brackets

\* 1 mm less control rod travel then col. 2

WPP 001/4 VWW 1.6 W 6

3. Edition

Testoil-iSO

VE 4/9 F 2250 R 134-4

U 460 494 137

Overflow temperature 45° C

supersed12.83 companyVWW engine: 086 T

All test specifications are valid only for Bosch Fuel-Injection Pump Test Benches and Testers

**Test Instructions and Test Equipment** 

see VDT-W-460/...

Pre-stroke setting

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference In delivery cm <sup>3</sup>	
1.1 Timing device travel	1500	3,2 - 3,7	mm	0,75		
1 2 Supply-pump pressure	1500	4,6 - 5,2	bar (kgf/cm²)	0,75		
1.3 Full-load delivery with charge-air pressure	1500	42,5 - 43,5	cm <sup>3</sup> /1000 strokes	0,75	2,5 (3,0)	
Full-load delivery without charge-air pressure	600	22,5 - 23,5	cm <sup>3</sup> /1000 strokes	0		
1.4 Idle regulation	475	6,0 - 10,0	cm³/1000 strokes	0	2,0 (3,0)	
1 5 Full-speed regulation	2525	9,0 - 15,0	cm <sup>3</sup> /1000 strokes	0,75		
1 6 Start	100	min. 35	cm <sup>3</sup> /1000 strokes	0		
1.7 Load-dependent port-closing						

2. Test Spe	cifications	checking values in brackets (	)	
2 1 Timing device LUA=0,75 bar	n = rev/min mm	1000 1,3-2,1 (1,0-2,4)	1500 (2,8-4,2)	2250 6,0-6,8 (5,7-7,1)
22Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm²)	600 2,5-3,1		2250 6,5-7,1
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 (0 bar) 55-138 (40-153)		2250 (0,75 ba 55-138 (40-153)
			<del></del>	<b>Z-Z:</b>

	Cm3/10 S	55-138	(40-153)		55-1	38 (40-153)
2 3 Fuel deliveries					3. Dime	nsions for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	<b>.</b>	Charge-air press bar (kgf/cm²)	Designation	and adjustment mm
End stop	2750 2525 2250 1500 1000 * 600		(8,0-16,0) (36,2-40,8) (40,7-45,3) (30,7-35,3) (20,0-26,0)	0,75 0,75 0,75 0,75 0,30 0	K KF MS SVS	3,2 - 3,4 5,7 - 6,0 1,2 - 1,4 3,2
switch-off					A	
elektr.	400	0			8	
idie stop	475 1200 1125 **	max. 4,0 22,0-24,0	(4,0-12,0)		Observations	
End stop	400 500	min. 21 max. 29			**	
2 4 Solenoid	max cut-in voltage	)				ote instruc- sheet 2.

**BOSCH** 

- \* Manifold-pressure compensator stroke = 4,0
- \*\* Setting point for EGR

Pull control lever toward full load untill gauge fits over driver and housing cover web. Measure delivery.

**6** 

## Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 1,9 e

2. Edition

VE 4/9 F 2300 R 141

Overflow temperature 45° C

supersed12.83

0 460 494 132

DHK: 1 688 901 022/130 bar

Test pressure line 6x2x450 mm / 1 680 750 073 company:Fiat engine: X 8/43

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kg1/cm²)	Difference in delivery cm <sup>2</sup>
1.1 Timing device travel	1500	4,3-4,7	mm		
1 2 Supply-pump pressure	1500	5,6-6,2	bar (kgl/cm²)		
3 Full-load delivery with charge-air pressure			cm <sup>3</sup> /1000 strokes		
Full-load delivery without charge air pressure	1500	31,0-32,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.4 Idle regulation	350	9,0-13,0	cm3/1000 strokes	1	2,5(3,0)
1.5 Full-speed regulation	2500	11,0-17,0	cm³/1000 strokes		
1 6 Start	100	min. 55,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	1500				

2. Test Spe	ecifications	checking values in brackets (	)	
2 1 Timing device	n = rev/min mm	800 1,7-2,5(1,4-2,8)	1500 (3 <sub>9</sub> 8-5,2)	2300 7,1-7,9(6,8-8,2)
2 2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,8-3,4		2300 7,4-8,0
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	400 55-138(40-153)		2300 55-138(40-153)
2 3 Fuel deliveries	·			3. Dimensions

2.3 Fuel deliveries			
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1030 strokes	Charge-air press ber (kgf/cm²)
End stop	2600 2500 2400 2250 1500 1000 600	6,2-6,8 (6,1-6,9) (10,0-18,0) 21,0-27,0(20,0-28,0) 32,7-34,7(31,4-36,0) (29,2-33,8) 30,7-33,3(29,0-35,0) 32,0-35,0(30,5-36,5)	
switch-off			
End Stop	350 400 540 300 400	(7,0-15,0) max. 4,0 0 min. 45,0 max. 46,0	
2.4 Solenoid	max. cut-in volta	Pge xxx min. 10 V rated voltage 12V.	

3. Ulmer	for assembly and adjustment mm		
ĸ	3,1-3,4		
KF	5.7-5.9		
MS	1,7-1,9		
svs	2,8		
XK X	20,2-22,2		
XL	10,3-13,7		
Observations	<u></u>		

**BOSCH** 

## Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 PEU 1,9 b

3. Edition

▼E 4/9 F 2300 R 162

Overflow temperature 45° C

supersedes Peugeot company: XUD 9

0 460 494 153

Pre-stroke setting

DHK: 1 688 901 022/130 bar

Test pressure line 6x2x450 mm / 1 680 750 073

Test Instructions and Test Equipment

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	2000	7,8-8,2	mm		
1 2 Supply-pump pressure	1250	3,9-4,5	bar (kgf/cm²)		
1 3 Full-load delivery with	-	-	cm³/1000 strokes		
charge-air pressure Full-load delivery without	1250	29,5-30,5	cm³/1000 strokes		2,5(3,0
charge air pressure +	A 550	2,5-3,5	cm³/1000 strokes		B 2,5(3,0)
1.5 Full-speed regulation	2400	20,0-26,0	cm <sup>3</sup> /1000 strokes		
1 6 Start	100	min. 44,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	1250				

2. Test Spe	cifications	checking values in brackets (	)	
2 1 Timing device	n = rev/min mm	700 0,5-1,5(0,3-1,7)	1250 3,4-4,2(3,1-4,5)	2000 (7,3-8,7)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	700 2,3-2,9		2000 5,9-6,5
Overflow delivery	n = rev/min cm³/10 s	600 55-138(40-153)		2300 55-138(40-153)
2 3 Fuel deliveries	i Pot eneed	Eval daliyan	I Charac air anns	3. Dimensions for assembly and adjustment

2.3 Fuel deliveries			
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2650 2500 2400 2250 2000 1250 700	max. 7,0 11,5-17,5 (10,5-18,5 (19,0-27,0 30,0-32,0 (28,7-33,2 30,6-32,6 (29,3-33,8 (27,7-32,2 29,5-32,5 (28,0-34,0)	
switch-off	2300	o	
Idle stop	A 550 B 375 C 470	2,5-3,5 8,5-10,5 (5,5-13,5) 8,0-10,5 (5,0-13,0) min. 40,0	
stop	300	max. 35,0	
2 4 Solenoid	max cut-in volt	AXX IIIII TO YOU	

3. Dimens	sions for assembly and adjustment
Designation	mm
к	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
svs	3,0
A	
В	
Observations	
*Residual d ting Idle s as per VDT-	lelivery set- setting (LFG) ·I-460135

**BOSCH** 

## **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 1,7 a

3. Edition

VE 4/8 F 2300 R 171

Overflow temperature 45° C

supersede 07.84 company Peugeot engine: XUD 7

0 460 484 010 DHK: 1 688 901 022/130 bar

Test pressure line

OHK: 1 688 901 022/130 bar 6x2x450 mm / 1 680 750 073
All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	1250	3,8- 4,2	mm		
1 2 Supply-pump pressure	1250	4,3- 4,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-	-	cm <sup>3</sup> /1000 strokes		
Full-load delivery without charge-air pressure	1250	29,5-30,5	cm³/1000 strokes		2,5(3,0
1.4 Idle regulation *	A 550	3,5- 4,5	cm <sup>3</sup> /1000 strokes		B 2,0(3,0
1.5 Full-speed regulation	2400	19,0-25,0	cm³/1000 strokes		
1.6 Start	100	min. 42,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	1250				

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	700 0,8-1,6(0,5-1,9)	1250 (3,3 <b>-</b> 4,7)	2000 8,0-8,8(7,7-9,1)
2 2 Supply pump	n = rev/min ber (kgf/cm²)	700 2,8-3,4		2000 6,4-7,0
Overflow delivery	n = rev/min cm³:10 s			2300 55-138(40-153)
O Front dollars				

2.3 Fuel deliveries			
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>2</sup> /1000 strokes	Charge-air press
End stop			
	2650	max. 7,0	ļ
	2500	11,5-17,5 (10,5-18,5)	
	2400	(18,0-26,0)	İ
	2250	28,0-30,0 (26,7-31,3)	<u> </u>
	, <b>2000</b>	29,0-31,0 (27,7-32,3)	ł
	1250	(27,7-32,3)	1
	700	29,5-32,5 (28,0-34,0)	
switch-off	2300	0	
die stop	<del> </del>		
ara stob	A 550	3,5 - 4.5	
	B 350	8,0 -12,0 (6,0-14,0)	
	C 470	8.0 -12.0 (6.0-14.0)	
End	1		
End	200	min. 44.0	
stop	300	max. 34,0	
.4 Solenoid	max. cut-in volte		
	test voltage	xx min 10 V	

3. Dimen	for assembly and adjustment mm
K KF MS SVS	3,2-3,4 5,2-5,5 1,3-1,5 max. 3,0
A B	
Observations	<del>-L</del>

Geschäftsbereich KH. Kundendienst, Kfz-Ausrüstung. < 1960 by Rob∋rt Bosch GmbH, Postfach 50, D-7000 Sruttgart 1. Printed in the Federal Republic of Germany. Imprimé en République Fédérale d'Altemagne par Robert Bosch GmbH.

450

Test Specifications Distributor-type Fuel-injection Pumps 46

WPP 001/4 CUM 5,9 g 2. Edition

Overflow temperature 45° C

supersēdė B'. 84

company:

Cummins 6 BT-590

VE 6/12F 1400 R173 O 460 426 O38

DHK: 1688 901 016/207+3 bar

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

**Test Instructions and Test Equipment** 

Pre-stroke setting

).3

ım + (

+ 0,02 (0,04)

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	2,1-2,5	mm	0,75	
1 2 Supply-pump pressure	1100	4,3-4,9	bar (kgf/cm²)	0,75	
1 3 Full-load delivery with	1100	86,0-87,0	cm³/1000 strokes	0,75	4,0 (4,5)
charge-air pressure Full-load delivery without	500	73,5-74,5	cm³/1000 strokes	0	
charge air pressure  1 4 Idle regulation	375	20,0-26,0	cm³/1000 strokes	0	3,5 (4,5)
1.5 Full-speed regulation	1600	31,0-39,0	cm³/1000 strokes	0,75	
1.6 Start	100	min. 97,0	cm³/1000 strokes	0	l l
1.7 Load-dependent port-closing					

2. Test Spec	ifications	checking values in brackets (	)				
LDA = 0.75 ba	n = rev/min អាកា n = rev/min	900 0,4-1,2 (0,1-1,5)	1100 (1,6-3,0)	1400 2,9-3,7 (2,6-4,0)			
LDA = 0,75 ba		2,0-2,6	1400 5,6-6,2				
Overflow delivery n = rev/min cm³/10 s		500 55 <b>-</b> 138 (40 <b>-</b> 153)	1400 55–138 (40–153)				
		<del></del>		2 Dimensions			

2.3 Fuel deliveries			
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm²)
End stop	1750 1600 1400 1250 1100 * 750 500	max. 1,5 (30,0-40,0) 79,5-82,5 (78,0-84,0) 82,5-85,5 (81,0-87,0) (83,5-89,5) 80,0-81,0 (77,5-83,5) (70,3-77,7)	0,75 0,75
switch-off		·	
End stop	450 375 300 130 200	max. 1,5 (18,0-28,0) 35,0-43,0 (34,0-44,0) min. 97,0 max. 85,0	
2 4 Solenoid	max. cut-in volta	XX III III TOTE	<u> </u>

3. Dimer	1SiONS for assembly and adjustment
ĸ	_
KF	5,1-5,9
MS	1,4-1,6
svs	2,4
<b>A</b>	
8	
Observations	
	ck electric device at 1.
	-pressure tor stroke

BOSCH

WPP 001/4 SOA 3,7 a 1. Edition

PES 4 A 80 D 410/3 RS 1183

RSV 325-1150 A 8 B 493-1 L

<sub>company</sub>Sonacome

Komb.-Nr. 0 400 464 095

F 4 L 912

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings 1,9-2,0 Port closing at prestroke (1,85-2,05) mm

Port closing at prestroke

mm (from BDC)

onat Control rod Fuel delivery travel		Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve		
mm <b>(2)</b>	cm <sup>1</sup> /100 strokes	cm <sup>-/</sup> 100 strokes	mm	cm //100/strokes	mm		
5	3	.1	2	3	6		
10,6+0,1	5,0-5,1	0,2(0,35)					
9,3-9,5	1,7-2,3	0,2(0,3)					
				1			
		•					
	mm 2 10,6+0,1	travel cm*/100 strokes 2 cm*/100 strokes 3 10,6+0,1 5,0-5,1	travel mm 2 cm 1/100 strokes 100 strokes 100,6+0,1 5,0-5,1 0,2(0,35)	travel mm 2 cm <sup>1</sup> /100 strokes cm <sup>1</sup> /100 strokes mm 2 10,6+0,1 5,0-5,1 0,2(0,35)	travel		

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

1 Uppe	er rated speed	f rev/min	Intermediate rated speed			4	Lower	Torque control		
Degree of deflection of control	travel	travel	İ			Control- lever deflection	rev/min	Control rod travel mm	tea/witi	travel
lever	2	3	4	5	6	in degrees	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 21	325	8,9	1150	10,6-10,7
	x = 4,0						100 325	min. 19,5 9,3-9,5		11,6-11,7 11,0-11,3
ca. 54	4,0	1190-1200 1230-1260 0,3-1,7					485-5		900	11,0-11,3

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	Full-load stop  6 Rotational- speed limitat Note			iel delivery paracteristics	Starting fuel delivery 5 4a			Idle stop	
rev/min	cm/1000 strokes 2	note changed to ) rev/min 3	rev/min 4	cm·/1000 strokes	rev/min 6	cm/1000 strokes 7	rev/min 8	travel mm 9	
1150	50,0-51,0 (48,5-52,5)	1190-1200*	•	-	•	-	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

WPP 001/4 SOA 3,7 a 1 1. Edition

En

PES 4 A 75 D 410/3 RS 1183 Komb.-Nr. 0 400 464 104

RSV 325-1400 A 8 B 742 - 1L

supersedes Company Sonacome F 4 L 912

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(1,85-2,05)

mm (from BDC)

Rotational speed rev/min t	Control rod travel mm 2	Fuel delivery cm <sup>1/</sup> 100 strokes 3	Difference cm <sup>-y</sup> 100 strokes 4	Control rod travel mm	Fuel delivery cm/100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1400	11,0+0,1	5,5-5,6	0,2(0,35)			
325	7,9-8,1	0,8-1,4	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated speed rev/min  Degree of deflection of control ravel mm rev/min		Intermediate rated speed			Control- lever deflection in degrees	Lowe	Lower rated speed Control rod travel mm		rque control Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 18	325	7,5	1440	11,0-11,1
•	X =						100	min. 19,		12,0-12,1 11,7-12,0
ca. 71	4,0 1	440-1450 485-1515 ),3-1,7					325 640 <b>-</b>	7,9 - 8, 700 = 2,	ř	

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

			rel delivery naracteristics	Starting t	Starting fuel delivery 5 48		
m /1000 strokes	changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min	cm 1/1000 strokes	rev/min 8	Control root travel mm
55,0-56,0 (53,5-57,5	1440-1450*	800	50,0-52,0 (48,5-53,5)	-	~	-	-
	55,0-56,0	speed limitate vivote changed to ) rev/min 3	speed limitat   speed limitat	speed limitat into the changed to ) rev/min cm²/1000 strokes 3 characteristics changed to ) rev/min cm²/1000 strokes 5	rev/min 3 rev/min 6 rev/mi	m // 1000 strokes rev/min cm // 1000 strokes rev/min cm // 1000 strokes 5 rev/min cm // 1000 strokes 7	rev/min 3

Checking values in brackets

\* 1 mm less control rod travel than col 2



WPP 001/4 SOA 5,6 a 1. Edition

PES 6 A 75 D 410/3 RS 1197

RSV 325-1400 A 8 B 742-1 L

company Sonacome

Komb.-Nr. 0 400 466 079

F 6 L 912

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(1.85-2.05)

mm (from BQCIRW = 9.0-12.0 mm

Rotational speed rev/min	Control rod travel	Fuel delivery cm/100 strokes 3	Difference cm <sup>-/</sup> 100 strokes 4	Control rod travel mm	Fuel delivery cm*/100 strokes	Spring pre-tensioning (torque-control valve) mm 6
1380	12,4+0,1	5,9-6,0	0,25(0,4)			
325	9,4-9,6	0,9-1,5	0,2(0,35)			
	<u> </u>					

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

14 1	lection travel travel control mm mm rev/min				Control- lever deflection in degrees 7	lever deflection rev/min		IL 9 /	rque control  Control rod travel  mm   1 1	
loose ca. 67		0,3-1,0 75 1420-1430 1540-1570 0,3-1,7	•	-	•	-	325 100 325 680-7	9,0 min. 19,5 9,4-9,6 0 = 2,0	1380 500 865	12,4-12,5 13,2-13,3 12,8-13,0

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

	oil temp 40°C (104°F) Note		<b>3</b>	nel delivery aracteristics	Starting f	uel delivery 5	Idle stop   Control rod		
rev/min	cm <sup>1</sup> /1000 strokes 2	changed to 1 rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min 6	cm /1000 strokes 7	rev/min 8	travel mm 9	
1380	58,5-59,5 57,0-61,0)	1420-1430*	800	51,5-53,5 (50,0-55,0)	-	-	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

40

WPP 001/4 MWM 5,9a 1. Edition

En

PES 6A80D320RS 1271

RSV 350-1500A2B2122R

supersedes

Komb.-Nr. 9 407 083 274

company engine MWM D 229-6 94 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,2-2,3 (2,15-2,35)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>1</sup> /100 strokes	cm <sup>-</sup> / 100 strokes	mm 2	cm 1100 strokes	mm 6
1480	9.7-9.8	5,6-5,7	0,25(0,4)			
350	6,9-7,1	0,7-1,1	0,2 (0,35			
<del></del>						

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

	er rated speed	rev/min . I Control rod	Intermediate rated speed			Lower rated speed			3 Torque control		
Degree of deflection of control	travei mm	travel			İ	Control- lever deflection	rev/min	travel		travel	
lever 1	2	3	4	5	6	in degrees 7	8	9	rev/min 10	mm 11	
loose	800 X	0,3-1,0 =	-	-	-	ca.18	350 100	6.5 min.19.0	1480 1000	9,7-9,8 10,2-10,5	
ca.51	8,7 4,0 1740	1520-1530 1555-1585 0,3-1,7					350 650-71 810	6,9-7,1	800		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>W</b>	ull-load stop emp=40°C (104°F)	Rotational- speed limitat  Speed limitat			Starting fuel delivery 5			4a Idle stop	
	cm <sup>1</sup> /1000 strokes	Note changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min 6	cm/1000 strokes 7	rev/min 8	Control ro travel mm 9	
1480 1000	55,5-56,5 (54,0-58,0) 55,5-57,5 (53,5-59,5)	1520-1530*	800 500	53,0-55,0 (51,0-57,0) 48,5-50,5 (46,5-52,5)	100	19,0-21,0 mm RW	350	7,0	

Checking values in brackets

\* 1 mm less control rod travel than col 2

9.84



67

40

WPP 001/4 MWM 5,9 a1 1. Edition

En

PES 6 A 80 D 320 RS 1271

RSV 350-1150 A 2 B 2129-1R

Komb.-Nr. 9 407 083 281

supersedes
Company
D 229-6
engine 77 kW (105 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection, Pump Settings

Port closing at prestroke

(2,15-2,35)

mm (from BDC)

Rotational speed	travel		Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm /100 strokes 3	100 strokes	mm 2	cm <sup>1</sup> /100 strokes	mm 6
1150	9,4-9,5	5,0-5,1	0,25(0,4)		2	
350	6,9-7,1	0,7-1,0	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Degree of deflection of control	r rated speed Control rod travel mm	rev/min Control rod fravel mm rev/min	Interme	diate rated	speed	Control- lever deflection	Lower	rated speed Control rod travel mm	I (	rque control Control rod travel
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
lose	800 X =	0,3-1,0	-	•	•	ca.19	350 100	6,5 min.19,0		10,3-10,5
ca.44	8,5 4,0 1400	1170-1180 1210-1240 0,3-1,7					350 680-74 800	6,9-7,1 D = 2,0 max.1,0	500	11,0-11,1

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

II-load stop	6 Rotational- speed limitat	6 Rotational Speed Irmitat 3a Fuel delivery characteristics			fuel delivery 5	4a) Idle stop	
emp 40°C (104°F) cm/1000 strokes 2	Note changed to .) rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min 6	cm <sup>1</sup> /1000 strokes 7	rev/min 8	Control root travel mm 9
49,5-50,5 (48,0-52,0)	1170-1180*	900 500	51,5-53,5 (49,5-55,5) 53,0-55,0 (51,0-57,0)	100	19,0-21,0 mm RW	350	7,0
	mp 40°C (104°F) cm//1000 strokes 2 49,5~50,5	mp 40°C (104°F) Speed limitat Note changed to .) rev/min 2  49,5-50,5  1170-1180*	speed limitat Note changed to .) rev/min 3 rev/min 4  49,5-50,5 (48,0-52,0) 1170-1180* 900	speed limitat Note changed to .) rev/min 2 cm*/1000 strokes 2 rev/min 4 cm*/1000 strokes 5  49.5-50,5 (48,0-52,0) 1170-1180* 900 51,5-53,5 (49,5-55,5) 500 53,0-55,0	mp 40°C (104°F) cm*/1000 strokes 2  49.5-50,5 (48,0-52,0)  Note changed to .) rev/min	speed limitat Note changed to ) rev/min 2 cm*/1000 strokes 2 changed to 1 rev/min 4 cm*/1000 strokes 5 rev/min 6 cm*/1000 strokes 7 cm*/1000 strokes 7 1170-1180* 900 51,5-53,5 (49,5-55,5) 6 100 mm RW	Cm   1000 strokes   Cm

Checking values in brackets

\* 1 mm less control rod travel than col 2

9.84

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Fédérale d'Allemagne par Robert Bosch GmbH.

En

Testoil-ISO 4113

PES 6 A 80 D 320 RS 1280

1 - 5 - 3 - 6 - 2 - 4 je  $60^{\circ}$ 

Komb.-Nr. 0 400 476 071

RSV 300-1150 AOB 2001 DR

supersedes

3.84

company: engine:

Eicher EDK 6-4 Saugmotor

77 kW (105 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings (2,10-2,30)

Port closing at prestroke

mm (from 60C)

Rotational speed		Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1130	8,9-9,0	5, 1 - 5, 2	0,2(0,35)			
300	6,1-6,3	0,7 - 1,3	0,2 (0,3)			
					1	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper	rated speed		Intermediate	rated spe	ed	4 Lowe	r rated spi	ed	(3) Tot	que control
Degree of deflection of control lavar	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel
<u>'</u>	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	•	ca. 29	300	5,7	1 130	8 <b>,</b> 9 <b>-</b> 9,0
10036	X =	6,0				ļ	100	min.19,5	795	9,2-9,4
ca. 53		180=7,9	<b>!</b>				300	6,1-6,3	500	9,5-9,6
(5)		245=4,0 0,3-1,7						80= 2,0 max. 1,0		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	ad stop				Starting fuel delivery idle rev/min cm³/1000 strokes 6 7		5a Idle stop		
Test oil temp. 40°C (104°F) rev/min		Note: changed to rev/min 3	rev/min cm³/1000 strokes 4 5				rev/min 8 Control re		
1130	51,5 - 52,5 (50,0 - 54,0)	170-1180*	900 500	48, 5 - 51, 5 (47, 0 - 53, 0) 46, 5 - 48, 5 (45, 0 - 50, 0)	100	19,5-21,0 mm HW	300	6,2	

Checking values in brackets

\* 1 mm less control rod travel then col. 2

40

WPP 001/4 KHD 1 g 10 2. Edition

En

PES 2 A 80 D 310/3 RS 1322 RSV 325-1150 A 8 B 2011-1 L

Komb.-Nr. 0 400 462 054

supersedes6.83

Company
engine

F 2 L 912
25 kW bei
2300 min 1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

2300 min<sup>-1</sup> tractor D 3607-S 33

A. Fuel Injection Bump Settings

Port closing at prestroke

**Testoil-ISO 4113** 

(1,85-2,05)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve		
rev/min	mm (2)	cm3/100 strokes	100 strokes	mm	cm³/100 strokes	mm		
1	2	3	4	2	3	6		
1150	11,1+0,1	5,9-6,0	0,25(0,4)					
325	8,9-9,1	1,2-1,8	0,2(0,35)					
		1						

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

1 Uppe	er rated speed	rev/min	Interme	diate rated	speed	4	Lowe	rated speed	3 Torque control		
Degree of deflection	Control rod travel	Control rod travel				Control- lever		Control rod travel		Control rod travel	
of control lever	mm 2	mm rev/min	4	5	6.	deflection in degrees 7	rev/min 8	mm   9	rev/min	11	
loose	800	0,3-1,0	-	-	-	ca.26	325	8,5	1150	11,1-11,2	
İ	x =	6,0					100	min.19,5	500	12,0-12,1	
ca.60	9,9 4,0 1480	1190-1200 1320-1350 0,3-1,7					325 690-75	8,9-9,1 50=2,0	1010	11,5-11,7	

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

9	ull-load stop		Rotational-speed limital Note:			fuel delivery 5	Idle stop		
rev/min	cm <sup>3</sup> /1000 strokes	changed to) rev/min 3	rev/min	cm³/1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min	travel mm	
1150	59,0-60,0 (57,5-61,5)	1190-1200*	750	57,0-59,0 (55,0-6 <sup>1</sup> ,0)	100	19,5-21,0 mm RW	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

10.84

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. c. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.



WPP 001/4 STE 6,0 h 6 1. Edition

PE 6 A 85 D 412 RS 2303 Y Komb.-Nr. 0 400 656 159

RQV 250-1400 AB 879 DL

supersedes companyStevr engine WD 612.90 154 kW

All test specifications are valid for Boach Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm³/100 strokes 3	mm 6
1400	14,2+0,1	9,6-9,7	0,3(0,45)			
250	8,9-9,1	1,1-1,6	0,2(0,4)			7
			j			

Adjust the fuel delivery from each outlet according to the values in F

### **B.** Governor Settings

Upper rated s	peed			Intermediate	rated sp	eed	 Lower rated	speed		Stid	ina s	pleeve travel
defiection of control	rev/min Control rod travel	mana.	긱	Degree of deflection of control lever	rev/min	Control travel	Degree of deflection of control lever	rev/min	Control rod travel	3)		1 0
1	2	3		4	5	6	7	8	9	10	••••	11
max.	1450	15,2-17,	8	-	•	-	ca. 13		min.10,			0,5-0,7
ca. 47	13,2 4,0 1700	1440-1450 1580-1610 0-1,0	0					250   380-4   500	8,9-9,1  440=2,0  max.1,0	10	00	3,3-3,7 5,7-5,9 8,4
							<b>③</b>					

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roo Test oil ten	elivery d stop np. 40°C (104°F) 2	intermediate speed	high idle s	rery characteristics (5e)	Starting Idle switching	. •	Torque- travel	Control roc
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4e	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
LDA 1400	0,7 bar 96,0-97,0 (94,0-99,0)	1440-1450*	LDA 800	0,7 bar 91,5-94,5 (89,5-96,5)	-	-	-	-
			LDA	0 bar 12,5-12,6 mm RW				

Checking values in brackets

\* 1 mm less control rod travel then col. 2

10.84

BOSCH

ch KH. Kundendieget. Kiz-Ausrüstung. sech GwbH, D-7 Styttgert 1, Poetfach 50. Printed in the Federal Republic of Germany sublique Fédérale d'Allemagne par Robert Boach GmbH.

## D. Adjustment Test for Manifold Pressure Compensator

STE 6,0 h 6

- 2 -

Test at n =

1400

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
The state of the s	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE6ARS2303Y + RQVPA879DL	0,70	0 0,28 0,22	14,2-14,3 12,5-12,6 13,8-13,9 12,9-13,1

Notes

(1) when n

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

F12

ę

WPP 001/4 STE 6,0 h 5 1. Edition

En

PE 6 A 85 D 412 RS 2303 Z Komb.-Nr. 0 400 656 153

RQV 250-1400 AB 879 DL

supersedes

companySteyr engine: WD 612-68 u. -72 143 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres	stroke (	2.45-2.65)	mm (from BDC)	RW = 9	0-12,0	·
Rotational speed rev/min		Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	13,2+0,1	8,6-8,7	0,3(0,45)			
250	8,6-8,8	1,2-1,/	0,2(0,4)			
		<u></u>		<u> </u>		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Stiding	leeve travel
deflection of control	rev/min Control rod travel mm 2	Control rod travel mm rev/min 28	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3 9	rev/min 10	mm 11
max. ca. 49	1400 12,2 4,0 1700	15,2-17,8 1440-1450 1585-1615 0-1,0	-	-	-	ca. 13		min.8,5 6,4-6,6 380=2,0 max.1,0	600	0,5-0,7 3,3-3,7 5,7-5,9 8,4
						<b>③</b>		·		

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Fult-load d Control-ro Test oil ter	d stop	Rotational-speed 2b limitation intermediate speed	Fuel deli- high idle s	very characteristics (53)	Starting Idle switchin	. •	Torque- travel	control (5)
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	12	3	4	5	8	7	0	9
LDA 1400	0,5 bar 85,5-86,5 (83,5-88,5)	1440-1450*	LDA 800	0,5 bar 80,0-83,0 (78,0-85,0)	100	133,0-143,0 (130,0-146,0		-
		•	LDA 500	0 bar 56,0-59,0 (54,0-61,0)				

Checking values in brackets

\* 1 mm less control rod travel then col. 2

10.84

BOSCH

## D. Adjustment Test for Manifold Pressure Compensator

STE 6,0 h 5

- 2 -

Test at n =

1400

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE6ARS2303Z + RQVAB879 DL	0,50	0,17 0,15 0	13,2-13,3 12,9-13,0 12,2-12,5 12,0-12,1

Notes

(1) when n

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

## Test Specifications 4 Fuel Injection Pumps ② WPP 001/4 KHD 6,1 g and Governors

4. Edition

PES 6 A 85 D 410/3 RS 2415

Komb.-Nr. 0 400 836 024

RQ 300/1250 AB 935 DL

supersedes 9.82

company: KHD engine

BF 6 L 913 T

96 kW

2500 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings 1.90-2.00

Port closing at prest		85-2.05)	mm (from BDC)	Cyl	. 6	
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,1-11,2	8,0 - 8,1	0,3(0,45)			
300	7,3-7,5	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Checki	ng of slider	Full-load	speed re	gulation		idle spec	ed regula	ation		Torque	control
PRG ct	( )	Setting po	oint	Test spe	cifications (4)	Setting p	ooint	Test spe	cifications (5)		(3)
rev/mir	Control rod travel mm	rev/min	Control rod travel rn rn	Control rad travel mm	rev/min	rev/min	Control rod travel rom	rev/min	Control rod travel	rev/min	travel
1	2	3	4	5	6	7	8	9	10	11	12
80	19,2-10,8	800	20,0	10,1	1295-1310	300	7,4	100	min.8,8	1250	11,1-11,2
VH	max. 64°			4,0	1365-1395			300	7,3-7,5	800	12,3-12,4
		•		1500	0 - 1,0			700	max. 1,0	910	12,0-12,2
								545-	585=2,0	1050	11,3-11,6
	L										

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	lelivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting f	ruel delivery
rev/min	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /~1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes:/ mm
1250	80,0 - 81,0 (78,0 - 83,0)	•	800	69,5 - 72,5 (67,5 - 74,5)	100	19,0 - 21,0 mm RW

Checking values in brackets

9.84

Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung.
< 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany, Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

**WOO 001/4** KHD 5,1 d

2. Edition

engine:

estoil-ISO 4113

PES 5 A 80 D 410/3

Komb.-Nr. 0 400 865 016

EP/RSV 325-1150 A3 B2014DL

supersedes 5.78

company

KHD F5 L912

63kW - 85PS

1 - 3 - 5 - 4 - 2 0 - 72-144-216-288° ±0,5° (±0,75°) All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at pres	strok <del>e</del>	1,90-2,00 (1.85-2.05)	mm (from BDC)	mm (from BDC)							
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 2526 cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6					
1150	11,8	5,5 - 5,6	0,2(0,35								
	+0,1										
325	9,0-9,2	0,9 - 1,5	0,2(0,3)								
775/850		C, 4-5	0,3(0,4)		1						

Adjust the fuel delivery from each outlet according to the values in [

### **B.** Governor Settings

Upper	rated speed		Intermediate	rated spe	ed	4 Lowe	r rated spe	ed	(3) Tor	que control
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever		Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca.21	325	5,0		<u>+</u> 0,1
	X =	4,75					100 325	min. 19		11,8
€a.55	10,8 4,0 1350	1190-1200 1235-1265 0,3 - 1,7					390-4 500	5,4-5,6 50 = 2,0 0 - 1	775	12,1 12,7 12,8

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to	ad stop	6 Rotational- speed limitat. 3a Fuel delivery characteristics			Starting Idle	fuel delivery	(50 kd	e stop
Test oil temp rev/min 1		Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min cm³/1000 strokes 6 7		rev/min 8	Control rod travel mm
1150	55,5 - 56,5 (54,0 - 58,0)		775	57, 0 - 59, 0 (55, 5 - 60, 5)	•	•	•	-

Checking values in brackets

\* 1 mm less control rod travel then col. 2

WPP 001/4 DAF 8,3 n 1 3. Edition

Testoil-ISO 4113

PE 6 A 95 D 410 RS 2575

RSV 250-1200 A5B 2151 L

supersede 6 - 83

Komb.-Nr. 0 400 676 171

company: DAF

Specifications apply to test tubing 1 680 750 015

engine: DH 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

		(1,95-2,15)				
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1200	10,4+0,1	7,3 - 7,5	0,35(0,6			
250	6,0-6,2	0,7 - 1,1	0,35(0,5	)		
	<u> </u>			<u> </u>		
	<u> </u>	<u> </u>		<u> </u>	<u> </u>	

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper	rated speed	)	Intermediate	rated spe	ed	4 Lowe	r rated sp	ed	3 Tot	que control
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel
<u> </u>	<u> </u>	-		13	10	<del>!'</del>				11
loose	800	0,3 - 1,0	-	-	-	ca. 24	250	5 <sub>,</sub> 6	1200	10,4+0,
10026	X =-	5,0					250 635 <b>-</b> 6	6,0-6,2 $95 = 2,0$	800	11,1+0, 11,1+0,
£a.58	9,4	1240-1250	I						940	10,7+0,
)	4,0 1505	1340-1370 0,3-1,7								

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full+	oad stop	6 Rotational- speed limitat.		3a) Fuel delivery characteristics		fuel delivery	5a Idle stop	
rest oil temp. 40°C (104°F) rev/min cm³/1000 strokes 1 2		Note: changed to rev/min 3	rev/min cm³/1000 strokes 4 5		rev/min cm³/1000 strokes 6 7		rev/min 8 9	
1200	73,0-75,0 (71,0-77,0)	1240-1250*	800	74,5-77,5 (72,0-80,0)	100	121,5-131,5 bei 19,5- 21,0 mm RW	•	•

Checking values in brackets

\* 1 mm less control rod travel than col. 2

40

WPP 001/4 DAF 6,2 n

5. Edition

En

PE 6 A 90 D 320 RS 2577

RSV 250-750 A 7 B 2125 R

supersedes 5.84 DAF DT 615

Komb.-Nr. 0 400 676 167

Specifications apply to test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing difference between controlrod travel 9 mm and max. =2,5-3,5° camshaft

engine

Fort closing at prestroke (2,15-2,35) mm

mm (from BDC)

Rotational speed	Control rod travel	-2.30 Fuel delivery	Difference	Control rod travei	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm·/100 strokes 3	cm <sup>-/</sup> 100 strokes 4	mm 2	cm·/100 strokes	mm 6
750	11,0+0,1	7,5 - 7,7	0,4 (0,55			
250	5,9-6,1	0,8 - 1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Interm	ediate rate	ed speed	Control- lever deflection in degrees 7	Lowe rev/min	r rated speed Control rod travel mm	3 To	Control rod travel
loose	800 X. =	0,3-1,0 5.0			···	ca.15	250	6,0	-	-
<b>23</b> .40	10.0 4,0 955	770-780 785-805 0,3-1,7					260-320	= 2,0		

The numbers denote the sequence of the tests Set idle-speed auxiliary spring at 2 mm control-rod travel.

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>9</b>	all-load stop emp 40°C (104°F)	Rotational- speed limitat		uel delivery naracteristics	Starting I	luel delivery 5	4a Idle stop	
rev/min	cm //1000 strokes 2	changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min	cm <sup>1</sup> /1000 strokes	rev/min 8	Control rod travel mm
750	75,0-7 <b>7</b> ,0 (7 <b>3</b> ,0-79,0)	760-770*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

1084

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz. Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany tmprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 1 h

5. Edition

Testoil-ISO 4113

PE 6 A 95 D 410 LS2587 RQV 300-1150 AB1088L (1) PE 8 A 95 D 410 LS2588 RQV 300-1150 AB1088L (2)	supersed 6.83  company HD  engine F6 L 413 FW  (1) (102kW-139PS)
PE 10 A 95 D 610/4LS2589 RQV 300-1150 AB1047DL (3) PE 12 A 95 D 610 LS2590 RQV 300-1150 AB1047DL (4)	(2) F 8 L (136kW-185PS) (3) F10 L (170kW-231PS)
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers  A. Fuel Injection Pump Settings	(4) F12 L (204kW-277 PS) bei 2300 min <sup>-1</sup>

A. Fuel Injection Pump Settings
1,50-1,60
Port closing at prestroke (1,45-1,65)

Tunnelling or mining vehicles

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (lorque-control vaive) mm 6
1150 300 800/1000	9,0-9,2 6,2-6,3 		0,3(0,6) 0,3(0,5) 0,4(0,7)			

mm (from BDC)

Adju. The fuel delivery from each outlet according to the values in

## **B.** Governor Settings

(1) 2587 mit 1088L

Upper rated s	i (		Intermediate	rated sp	1	Lower rated	EDeed3	1	Sliding s	leeve travel
deflection	Control	Control rod to	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel	 	. ①
of control lever	rod travel	rev/min 29	of control lever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1150 1350	15,2-17,8 0 - 1		-	-	ca.11		min.7,5 5,9-6,1	300 600	1,2-1,3 3,1-3,4
ca.64		1190-1200 1220-1250					Ì	·670=2 <b>,</b> 0	1190	8,5
	,,0	1200 1200				320-400 39				

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roo Test oil ten			Fuel delivery characteristics 5e high idle speed 5b		Starting idle switchir		Torque travel	Control of
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 6	cm³/1000 strokes	rev/min	travel mm
1150	77,5 - 79,5. (75,5 - 81,5)	1190-1200*	800	80,5 - 82,5 (79,0 - 84,0)	100	119,0-129,0	800	

Checking values in brackets

\* 1 mm less control rod travel than coi. 2

Set control-rod stop to contact at 500 min/1

Cam sequence and angular cam spacing

$$1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12$$
 $0 - 15-60-75-120-135-180-195-240-255-300-315^{\circ}$  (4)

Tolerance  $^{+}$  0,50 ( $^{+}$ 0,75)

Upper rated s	peed			Intermediate	rated spe	ed		Lower rated	speed	<del></del>	Sudings	leeve travel
Degree of deflection of control lever	Control rodtravel	Control rod travel mm rev/min	(a) (2a)	Degree of deflection of control lever	rev/min	Control root travet mm		Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3		4	5	6		7	8	9	10	<u> </u>
max.	1150	15,2-17 	,8 	-	-	-	•	ca. 11	300	min. 7,5 5,9-6,1 670=2,0		1,2-1,3 3,1-3,4 _ 8,5
ca.64	8,0 4,0 1350	1190-120 1220-129 0 - 1,	50					320-40	)			

Torque control travel a

0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load of Control re Test oil ter		Rotational-speed (20) limitation intermediate speed	Fuel dela high idle s	very characteristics (56) speed (56)	idle	fuel delivery 6	Torque	Control ro
rev/min 1	cm /1000 strokes	rev/min 4a)	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min	cm-/1000 strokes	rev/min 8	travel mm
1150	77,5 - 79,5 (75,5 - 81,5)	1190-1200*		•	100	119,0-129,0	800	9,0-9,1 9,5-9,6 9,5-9,6
			800	80,5 - 82,5 (78,5 - 84,5)				,,,,,
		Set	contro	1-rod stop to	cont	hact at 500 m	in/1	

Checking values in brackets

\* 1 mm less control rod travel than cot 2

## Testoristy arms

**B. Governor Settings** 

(3) 2589 mit 1047 DL

Upper rated:	speed			Intermediate	rated spe	ed		Lower rated	speed			Sliding	leeve travel
Degree of deflection of control	rev/min Control rod travel	Control rod travel mm	(1)	Degree of deflection of control	i	Control ro	od 🕡	Degree of deflection of control	1	Control (	od	Sittings	1
lever	mm	rev/min	(28)	lever	rev/min	mm	<b>(4)</b>	lever	rev/min	mm	(3)	rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
max.	1150	15,2-17	,8	-	-	-		ca. 11		min.7		300	1,2-1,3
									300	6,2-6	, 3	600	3,1-3,4
ca.64	8,0	1190-12	00		]	İ			620-	680=2	,0	<u>[1190 </u>	8,5_
	4,0	1230-12	60					330-410					
	1350	0 - 1	,0		<b>!</b>			<b>3a</b>		٠			

Torque control travel a =

**~** 

## C. Settings for Fuel Injection Pump with Fitted Governor

Full load of Control ro Test oil ter		Rotational-speed (26) imitation intermediate speed	Fuel deli high idle	very characteristics (5a)	1 .0.0	fuel delivery 6	Torque- travel	control (5
rev/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	Control root travel mm
1150	78, 5 - 80, 5 (76, 5 - 82, 5)	1190-1200*	800	83,0-86,0 (80,5-88,5)	100	116,5-1265 113,5-129,5 = 14,4-14,8 mm RW	) 500 895	9,1+0,

Checking values in brackets

\* 1 mm less control rod travel than col 2

0

Upper rated s	peed			Intermediate	rated spe	eed	Lower rated	speed			
Degree of deliection of control lever	1 -	Control rod travel mm rev/min	$\sim$	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod		leeve travel
1	2	3	<b>(3)</b>	lever	rev/min	mm (4	lever	rev/min	mm (3)	1	u)U)
	t			<u> </u>	5	6	<del> </del>	18	9	10	_!1
max.	1190	15,2-17	,8 	-	-	-	ca.11	100 300	min. 7,7 6,1-6,3	300 600 1190	1,2-1,3 3,1-3,4
ca. 64		1190-120								1,30	8, <u>5</u>
		1225-125	כנ				320-425	ŀ		1	i
	1350	0 - 1	.0		1		NEU-42)			[	
							<b>3</b> a	İ			

Torque control travel a -

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load o Controt ro Test oil tei	d stop	Rotational-speed (2b) Irmitation Intermediate speed	Fuel deli high idle :	very characteristics (5a)	Starting Idle switchin	G.,	Torque	control 5
rev/min	cni /1000 strokes	rev/min 4a	tev/min	cm <sup>1</sup> /1000 strokes 5	rev/min	cm·/1000 strokes	rev/min 8	Control rod travel mm
1150	78,5-80,5 (76,5-82,5)	1190-1200*	800	83,0-86,0 (80,5-88,5)	100	116,5 -126,5 (113,5-129,	5)500	9,6+0, 9,4+0,

Checking values in brackets

Tostoil-ISO 4113

\* 1 mm less control rod travel than col. 2

**B. Governor Settings** 

Upper rated	speed			Intermediate	rated spe	ed	Lower rated	speed	····		
Degree of deflection of control	rev/min  Control  rod travel	Control rod travel	(ta)	Degree of deflection of control	1	Control rod Iravel	Degree of deflection of control	ĺ	Control rod	Sliding s	leeve travel
lever	mm	rev/min	<b>(59)</b>	lever	rev/min	mm 4	lever	rev/min	mm (3	) rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
	]					ł					
					İ		<u> </u>				
	1			•	1				•		
					ł					j .	
			i								
	1				ĺ		<b>3</b> a				
			1								

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter	lelivery id stop mp 40°C (104°F) 2	Rotational-speed (2b) Ilmitation intermediate speed	Fuel deli high idle	very characteristics 5a speed 5b	Starting Idle switching		6	Torque- travel	control (5
rev/min	cm <sup>1</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min			rev/min	Control roll travel mm
1	2	3	4	5	6	7	ļ	8	9
	Ì								·
			}	1					
								1	
						ļ	- 1		
								1	

Checking values in brackets **En** 

\* 1 mm less control rod travel than col 2

F22

11.82

WPP 001/4

KHD 6,1 h

5. Edition

PES 6 A 85 F 410 RS 2591

Komb.-Nr. 0 400 876 283

RS 325/1325 AOB 691 DL

supersedes

AOC 691 DL

company enaine

KHD BF 6 L 913 - BW

124 kW (169 PS) / 2650 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Festoil-ISO 4113

2,50-2,60 (2,45-2,65)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm³/100 strokes	cm³/ 100 strokes	m.m	cm³/100 strokes	mm
1	2	3	4	2	3	6
1325	12,8-12,9	9,0-9,1	0,3(0,45)			
325	8,4-8,6	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

VH=Control lever

Vertical position = 40° FH=Accelerato lever Horizontal position = 40°

## **B.** Governor Settings

Uppe	r rated speed	rev/min	Interme	diate rated	d speed	4	Lower	rated speed	(3) 10	rque control
Degree or	Control rod	Control rod   travel	<u> </u>	1		Control-		Control rod  travel		Control rod travel
deflection of control	mm	mm rev/min		}		lever deflection in degrees	rev/min	mm	rev/min	mm
lever 1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				FHca.21	325	8,5	1325	12,8-12,9
						VH max.	100	min.10,0	1000	12,8-12,9
VHca.53		1375=11,8					400 -	425= 6,0	850	12,9-13,1
PH max.		1445= 4,0 0,3-1,7							500	12,9-13,1

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Fu	ill-load stop	6 Rotational- speed limitat		uel delivery	Starting	fuel delivery 5	4a Idle stop	
Test oil to	emp. 40°C (104°F) cm\$1000 strokes	Note: changed to :) rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1325	0,7 bar 90,5-91,5 (88,5-93,5)	1365-1375*	LDA 1000 LDA 850	0,7 bar 85,0-88,0 (83,0-90,0) 0,7 bar 83,5-86,5	100	104,0-114,0 =17,8- 18,2 mm RW (Electroma	gnet	
		LDA 0 bar	500	(81,5-88,5) 55,5-58,5 (53,5-60,5)		24 V)		

Checking values in brackets

\* 1 mm less control rod travel than col 2

## D. Adjustment Test for Manifold Pressure Compensator

KHD 6,1 h - 2 -

Testatn

500

rev/min decreasing the state - in bar gauge pressure

	*****		
Pump/governor	Setting	Measurement	diminution Control rod travet difference
	Gauge pressure bar	Gauge pressure - bar	mm (1)
2591 + 691 DL	0,70	0,43 0,28 0	12,9 - 13,1 12,7 - 12,8 12,1 - 12,3 11,5 - 11,7
t			

Notes

(1) when n

rev/min and gauge pressure =

har ( maximum full-load control rod travel)

## **Test Specifications** Fuel Injection Pumps (A) and Governors

9. Edition

PES 6 A 90 D 410 RS 2596 RSV 575-1250 A 1 B 618 L

Komb.-Nr. 0 400 876 295

A 1 C 618 L

supersedes 2.82

Daimler-Benz company OM 352 A

115 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(1,95-2,15)

mm (from BDW = 9.0 - 12.0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm/100 strokes 3	Difference cm <sup>-/</sup> 100 strokes 4	Control rod travel mm 2	Fuel delivery cm //10/3 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	13,2+0,1	7,8-7,9	0,3(0,45)			
575	7,2-7,4	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

(1) Uppe	er rated speed	d rev/min	Interme	diate rate	d speed	4	Lower	rated speed	(3) To	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800 X :	0,3-1,0 = 4,0	•	•	•	ca.27	575 100	7,3 min. 19,0	-	-
ca 58	4,0 12	250-1255 274-1291 ,3-1,7					575 585-645	7,2-7,4 = 2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat		uel delivery paracteristics	Starting l	fuel delivery 5	<b>4a</b> Id	le stop
rev/min	emp 40°C (104°F) cm '/1000 strokes 2	Note changed to 1 rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min 6	cm <sup>1</sup> /1000 strokes	rev/min 8	Control rod travel mm
1230	77,5-78,5 (75,5-80,5	1250-1255*	-	-	100	80,0-90,0 (77,0-93,0) =16,0- 16,6 mm RW	•	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.84

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Federale d'Allemagne par Robert Bosch GmbH.

Testoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 RAB 9.7 b

3. Edition

PES 6 A 95 D 420 LS 2595 Komb.-Nr. 0 400 846 514

RQ 200/1100 AB 1094-1 R

supersedes5.84 company:RABA

D 2356 HM 6 U

162 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(1.95-2.15)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,3+0,1	12,1-12,3	0,3(0,6)			
200	6,0-6,2	0,8-1,4	0,3(0,5)			
				ļ		

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Checkin PRG che rev/min 1	Control rod travel	Full-load: Setting po rev/min 3	•	•	rev/min	idle spe Setting ( rev/min 7	-		cifications 5 Control rod travel	Torque ( rev/min 11	Control rod 3
550 VH =	19,2-20,8 max. 46°	550	20,0		1145-1160 1175-1205		6,0	100 200 310- 400	min. 8,0 6,4-6,6 350=2,0 max.1,0	1100 500 750 855	11,3-11,4 11,9-12,0 11,7-11,9 11,5-11,7
on flywei	ontrol travel		0,	mm	·	ed regula	ition: At		160 min <sup>-1</sup>		1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 36	Starting (	fuel delivery
rev/min	cm <sup>3</sup> /-1000 atrokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min	nd tred cm 71000 strokes JAMin CV 7
1100	121,0-123,0 (119,0-125,0)	500	500	119,0-125,0 116,5-127,5) max. 117,0 max. 119,)	100	17,5-18,1

Checking values in brackets

Testoil-ISO 4113

WPP 001/4 MB 5,7x3

3. Edition

PES 6 A 90 D 410 RS 2596

RSV 350-1400 AOB 1148 L

En

supersede 6.83

Komb.-Nr. 0 400 876 313

company Daimler Benz engine ·

OM 352 A

115 kW (156 PS)

All test specifications are valid for Bosch Fuet Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery  cm³/100 strokes	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	11,3+0,1	7,1 - 7,2	0,3(0,45)			
350	7,9+0,2	0,9-1,5	0,2(0,4)			
·						

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Upper	rated speed	1	Intermediate	e rated spe	eed	(4) Lowe	r rated sp	eed	(3) To	rque control
Degree of deflection of control lever	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever	rev/min	Control rod travel mm 6	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3 - 1,0	-	•	-	ca. 22	350	7,5	1380	11,3+0,
10056	x =	5,0					100 350	min. 19	800 1200	12,3+0 11,6+0
a.66ع	1430-1	40 = 10,3	: }				530-	7,9-8,1 90 = 2,0		11,010
	1510-1: 1620 =	40 = 4.0 $0.3 - 1.7$						<b>]</b> <b> </b> 		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2 Full+k	pad stop	6 Rotational- speed limitat.		3a Fuel delivery characteristics		fuel delivery	(5a) Idle stop	
Test oil tem rev/min 1	p. 40°C (104°F) cm³/1000 strokes 2	Note: changed to rev/min 3	rev/min cm³/1000 strokes 4 5		rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1380	0,7 bar 71,0-72,0 (69,0-74,0)	1430-1449*	LDA 700 LDA 500	0,7 bar 67,0-69,0 (64,5-71,5) 0 bar 58,0-59,0 (56,0-61,0)	100	78,0-88,0 bei 15,6- 16,0 mm RW		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

### D. Adjustment Test for Manifold Pressure Compensator

rev/min decreasing pressure - in bar gauge pressure Test at n = 500

MB 5,7  $\times$  3 -2-

			110 037 7
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure =	bar Gauge pressure =	e = bar mm (1) .
RS 2596 with AOB 1148 L	0,70		12,3-12,4
7,00		0	11,8-11,9
		0,	,38 12,0-12,1
			·

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at Unlocking at

0,4 - 0,5 bar 0,15 - 0,25 bar

## Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 KHD 4,7 c 4. Edition

En

PES 5 A 80 D 410/3 RS 2603

RS 325/1650 AOB 2087 L AOC 2087 L supersedes

5,84 KHD

Komb.-Nr. 0 400 865 023

company engine

F 5 L 912

54 kW (73 PS) 3000 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A power output

#### A. Fuel Injection Pump Settings

Port closing at prestroke

estoil-ISO 4113

1,9 -2,0 (1,85-2,05)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm³/100 strokes	cm <sup>3</sup> / 100 strokes 4	mm 2	cm³/100 strokes	mm 6
1490	9,9-10,0	5,1-5,2	0,2(0,35)			
325	8,7-8,9	1,7-2,1	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

1 Uppe	r rated speed	rev/min	Intermed	diate rated	speed	(4)	Lower	rated speed	(3) To	rque control
Degree of deflection	Control rod travel	Control rod travel				Control- lever		Control rod travel		Control rod travel
of control lever	mm 2	mm rev/min	4	5	6	deflection in degrees 7	rev/min 8	mm 9	rev/min 10	mm 11
loose	800	0,3-1,0	-	-	-	VHmax.	325	8,8	-	-
						FHca.18	100 325	min.13,6		
VHca.49	8,9	1690-1700					550 -	8,7-8,9 590=2,0		
PH (2a) max.		1740-1770 0,3-1,7					600	max.1,8		
		· · · · · · · · · · · · · · · · · · ·	l			<u> </u>				

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat		uel delivery naractenstics	Starting (	uel delivery 5	4a Idle stop		
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9	
1490	50,5-51,5 (49,0-53,0)	1690-1700*	-	-	-	-	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.84

**BOSCH** 

Testoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 12,7 p1 1. Edition

PE8A95D 410 LS 2608

RO 300/1250 AB 929 L

supersedes

Komb.- Nr. 0 400 648 140

company: KHD

F8L413 F engine:

1-8-7-2-6-5-4-3 je  $45^{\circ} \div 0.5^{\circ} (\div 0.75^{\circ})$ 

157 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1250	9,3-9,	4 8,6-8,8	0,35(0,6			
300	6,4-6,6	1,2-1,8	0,35(0,5	5)		

Adjust the fuel delivery from each cutlet according to the values in

## **B. Governor Settings**

PRG che	Control rod	Full-load Setting p		-	cifications (4)	Idle spe Setting	-		cifications 5	Torque	
rev/min 1	travel mm 2	rev/min 3	red travel mm 4	red travel rnm 5	rev/min 6	rev/m <del>i</del> n 7	red travel mm 8	rev/min 9	travel	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0		1295-1310 1345-1375	300	6,5	100 300 410-	min.8,0 6,4-6,6 450 =2,0	650 945	9,3-9,4 9,7-9,8 9,5-9,7 9,3-9,6
	ontrol travel		0,40		-		12	<b>95-13</b>	10 min 1	•	1 mm less contr

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel injection Pump with Fitted Governor

Full-load d governor d Test oil ten	elivery on control lever np. 40°C (104°F)	2	Control rod stop	3	Fuel deliv	ery characteristics	3	Starting lidle spec		6
rev/min 1	cm³/-1000 strokes 2		rev/min 3		rev/min 4	cm <sup>2</sup> /-1000 strokes 5		rev/min	Cont nd t cm <sup>3</sup> /1000 strokes:/ mm 7	travel .
1250	85,5-87,5 (83,5-89,5)		-		750	78,5-81,5 (76,0-84,0)		•	-	

hecking values in brackets

0

Testoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 12,7 p

3. Edition

PE 8 A 95 D 410 LS 2608

ROV 300-1100 AB 1126 L

supersedes 5

Komb.-Nr. 0 400 648 128

1-8-7-2-6-5-4-3 je  $45^{\circ} \div 0.5^{\circ} (\div 0.75^{\circ})$ 

133 kW/2200 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

		(1,33-2,13)				
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,5-9,6	8,8-9,0	0,35(0,6			
300	5,9-6,1	0,9-1,9	0,35(0,5			

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Upper rated	speed	•		Intermediate	rated sp	<del>ee</del> d	Lower rated	speed	Sliding sleeve travel		
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	(a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min	Control rod travel mm 3		0
max.	1100	15,2-17	,8	-	-	-	ca. 14			250	1,1-1,3
ca. 44	8,5 4,0 1345	1140-11! 1195-12: 0-1,	25			,	355 <b>-</b> 415			530 820 1100	3,6-4,2 5,8-6,0 8,1
					-:		<b>③</b>				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		intermediate apead	high idle s	rery characteristics (5e)	idle	fuel delivery 8	Torque-control (5 travel		
rev/min	c/h³/1000 strokes	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/mire	travel mm	
1	2	3	4	5	6	7	8	9	
1100	88,0-90,0 (86,0-92,0)	1140-1150*	700	90,5-93,5 (88,0-96,0)	100	120,0-130,0 (117,0-133,0) - 14,0-14,4 mm RW	500 825	9,5-9,6 0,1+0,1 9,9+0,2 9,6-9,9	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 MWM 6,2 e 2

1. Edition

PES 6 A 90 D 320/3 RS 2660 Komb.-Nr. 0 400 866 114

RSV 325-1200 A0C 2182 R

supersedes MWM company TD 226 B-6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings 2,95-3,05 Port closing at prestroke (2,90-3,10) mm

estorios 411

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm1/100 strokes 3	cm <sup>1</sup> / 100 strokes 4	mm 2	cm/100 strokes	mm 6
1200	9,0-9,1	7,5-7,6	0,3(0,45)			
325	7,4-7,6	2,6-3,4	0,25(0,4)			
· <del></del>						

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

	er rated speed	d rev/min	Intermediate rated speed			(4)	Lowe	3 Torque control		
Degree of deflection of control lever	travel mm	travel mm rev/min				Control- lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
<del> </del>	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	•	ca. 25	325	7,0	1200	9,0-9,1
l.	x =	5,0					325	7,4-7,6	500	9,9-10,0
ca .51	8,0 4,0 1465	1240-1250 1300-1330 0,3-1,7					345-6	05=2,0	860	9,5-9,7

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	2b) Full-load stop est oil temp 40°C (104°F)  Rotational- speed limits			uel delivery haracteristics	Starting I	fuel delivery 5	4a Idle stop	
rev/min	cm /1000 strokes 2	changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min	cm/1000 strokes 7	rev/min 8	Control rod travel mm
1200	74,5-75,5 (72,5-77,5)	1240-1250*	500	59,5-60,5 (57,5-62,5)	100	133,0-143, (130,0-146, =19,5-21,0 mm RW	0)	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

## **Test Specifications Fuel Injection Pumps** and Governors

WPP 001/4 KHD 1 o

4. Edition

estoil-ISO 4113

PES 6 A 95 D 410 RS 2625 Komb.-Nr. 0 400 876 305 RSV 325-1150 A8B 674 DL A8C 674 L

supersedes 3.84 company: KHD B F 6 L 913 B Bagger

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
Port closing at prestroke (1.85-2.05) mm mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cın³/ 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1150	11,4+0,1	8,0 - 8,2	0,3(0,6)			
325	7,2-7,4	1,6-2,2	0,3(0,5)			
			1			

Adjust the fuel delivery from each outlet according to the values in F

### **B.** Governor Settings

Upper	rated speed		Intermediate	rated spe		4 Lower	r rated spe		3 Tor	que control
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	Control rod travel mm
],	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	•		ca. 15	325	6,8	1150 500	11,4+0, 12, 1+0,
	X =	3,0					325		1000	11,8+0,
ca. 50	10,4	1190-1200 1265-1295	•				585-6			
0	4,0 1325	0,3 - 1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to	ad stop	6 Rotational- speed limitat.		et delivery aracteristics	Starting Idle	fuel delivery	Sa Idle stop	
Test oil tem rev/min 1	cm <sup>3</sup> /1000 strokes 2	Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes	rev/min cm³/1000 strokes		rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 80,0 - 82,0 (78,0 - 84,0)	1190-1200*	LDA 800 LDA 500	0,7 bar 83,0-86,0 (80,5-88,5) 0 bar 56,5 - 59,5 (54,5 - 61,5)	l	116,5-126,5 (113,5-129, = 15,9 - 16,4 mm RW	5)	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

KHD 1 o

-2-

Testoil-ISO 4113

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES 6 ARS 2625	0,7		12,2 - 12,3
with A8B 674 DL A8C 674 L		0	11,1 - 11,2
AGC 074 L		0,36	11,9 - 12,0
		0,2	11,1 - 11,3
		,	
		·	-

Notes

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 VAU 5.4 a 1

1. Edition

PES 6 A 95 D 320 RS 2646 Komb.-Nr. 0 400 846 533

ROV 300-1300 AB 1163-1 R

supersedes

companyauxhall engine: 330 T/C

PS104150 4

All test specifications are valid for Bosch Fuel Injection Pump Tost Benches and Testers

A. Fuel Injection Pump Settings

Port closing at pres	troke	2,5-2,6 (2_45-2_65)	mm (from BDC)		·	
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm³/ 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
810	9,7-9,8	6,4-6,6	0,35(0,6)			
300	5,9-6,1	0,8-1,4	0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in

**B. Governor Settings** 

Upper rated	Control travel mm rev/min 2 3 1440 15,2-17		Intermediate	rated sp	eed	Lowerland	speed		Clidica	leeve travel
Degree of deflection of control levar	Control rod travel	travel mm	deflection of control	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min	Control rod travel mm 3	rev/min	mm 11
max.	1440	15,2-17,8	-	-	-	ca. 17	100	min.7,4	275	0,9-1,1
ca. 61		1350-1360 1455-1485 0-1,0				350-490	300	5,9-6,1	500	3,1-3,5 5,7-5,8 8,0
						<b>③</b>				

Torque (control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter	d stop	Rotational-speed 2b limitation intermediate speed	Fuel delin high idle s	rery characteristics (Se peed (Sb)	idle	fuel delivery 6	Torque-control (5 travel) Control re	
rev#min 1	cm <sup>3</sup> /1000 strokes	rev/min 4a 3	rev/min 4	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min 8	travel mm
810	63,5-65,5 (61,5-67,5)	1350-1360*	1200 500	71,5-74,5 (69,5-76,5) 52,0-55,0 (50,0-57,0)	100	86,5-96,5 (83,5-99,5) = 19,5-21,0 mm RW	•	•

\* 1 mm less control rod travel then col. 2

2

Testoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 MAN 11.4 h

1. Edition

PES 6 A 95 D 410 LS 2669 Komb.-Nr. 0 400 846 523

RQ 750 AB 1172 L

MAN

D 2566 ME 114 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Control rod

Port closing at prestroke

Rotational speed

(1,45-1,65)

Fuel delivery

mm (from BDCZy1. 6: RW=9.0-12.0 mm

_		,		
		Control rod travel		Spring pre-tensioning (torque-control valve)
	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm

	rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
	700	12,1+0,1	11,8-12,0	0,35(0,6)			
	250	5,9-6,1	0,9-1,5	0,35(0,5)			
- 1							

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Checkin PRG che	- ·	1	Full-load : Setting po	oint	Test spe	cifications (4)	idle spec	•		cifications 5	Torque	control
rev/min 1	Control rod travel mm 2		rev/min 3	Central red travel mm 4	Control red travel mm 5	rev/min 6	rev/min	Central red travel mm 8	rev/min 9	Control rod travel mm 10	rev/min	Control rod Control
•	-		-	•		750-755 775-785	•	•	•	-	-	-
	ontrol travel			-					750-7	55 min 1		1 mm less contro

Torgue-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting lidle spec	fuel delivery
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes	rev/min	Carina red travel cm <sup>3</sup> /1000 strokes:/ mm 7
700	118,0-120,0 (116,0-122,0)	<del>-</del>	-	-	•	-
<b>*</b>						

Checking values in brackets

①

705

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 8,0 o

1. Edition

PES 5 A 95 D 410 RS 2680 Komb.-Nr. 0 400 845 080

ROV 300-1150 AB 1088-1 L

supersedes comparKHD

engine:F 5 L 413 FRW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes	mm 6
1150	9,0-9,1	7,2-7,4	0,35(0,6)			
300	6,4-6,6	1,3-1,7	0,35(0,55	)		
			•			

Adjust the fuel delivery from each outlet according to the values in [

### **B. Governor Settings**

Upper rated	speed	•		Intermediate	e rated sp	eed		Lower rated	speed			Sudia -	
Degree of deflection of control layer	rev/min Controi rod travel mm 2	Control rod travel mm rev/min 3	(1) (2)	Degree of deflection of control lever	rev/min 5	Control travel mm 6	rod	Degree of deflection of control lever	rev/min	Control travel mm	rod 3	rev/min	mm
max. ca. 58	8,0	15,2-17 1190-120 1235-126 0-1,0	00 55	•	-	-		ca. 12 315-425 ③	300	min.8 6,4-6		550	0,5-0,8 2,9-3,1 4,7-5,0 7,9

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil te	felivery od <del>stop</del> mp. 40°C (104°F) 2	Rotational-speed 2b timitation intermediate speed	Fuel dali high idle	rary characteristics (5a)	Starting Idle switchin		Torque travel	-control 5
rev/min 1	cm³/1000 strokes	rev/min 40 3	rev/min 4_	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min	travel mm
1150	72,0-74,0 (70,0-76,0)	1190-1200*	600 650 **	80,5-83,5 (78,0-86,0) 98,5-101,5 (96,0-104,0)	100	115,0-125,0 (112,0-128,0) = 14,0-14,6 mm RW	500	9,0-9, 10,4+0,

Checking values in brackets

\* 1 mm less control rod travel than col. 2

<sup>\*\*</sup> Adjusted with the full-load stop unblocked. Solenoid switched off.

Testoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps 1 WPP 001/4 KHD 9,6 m and Governors

1. Edition

PES 6 A 95 D 410 RS 2681 Komb.-Nr. 0 400 846 530

ROV 300-1150 AB 1088-1 L

company: KHD

F 6 L 413 FRW

102 kW

Tunnelling or mining vehicles

All text specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres	troke (	1,45-1,65)	mm (from BDC)	mm (from BDC)							
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)					
rev/min 1	mm 2	cm³/100 strokes 3	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6					
1150	9,0-9,1	7,9-8,1	0,35(0,6)								
300	6,4-6,6	1,3-1,7	0,35(0,55)								
	}										

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	e rated sp	eed	Lower rated	speed	•	Sliding s	leeve travel
0	rev/min Control rod travel mm	Control rod travel mm rev/min 2a	of control	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm (1)
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca.12	100 300	min.8,0 6,4-6,6	250 550	0,5-0,8 2,9-3,2
ca.58	8,0	1190-1200				l		•, •,•	850	4,7-5,0
	4,0	1230-1260			1		İ	•	1150	7,9
	1350	0-1,0			l	310-450				
						<u>3</u>	}			

0,7 <sub>mm</sub> Torque control travel a =

### C. Settings for Fuel injection Pump with Fitted Governor

Futi-toad de Control-ros Test oil ten		limitation intermediate speed	Fuel deliv		Starting Idle switchin	<u> </u>	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min (4a)	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	6
1150	79,0-81,0 (77,0-83,0)	1190-1200*	650	80,5-83,5 (78,0-86,0)	100	120,0-130,0 (117,0-133,0	650 800	9,0-9,1 9,7-9,8 9,5-9,7 9,0-9,3

Checking values in brackets

\* 1 mm less control rod travel then col. 2

8.84

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## Test Specifications Fuel Injection Pumps (A) and Governors

WPP 001/4 LIE 5,6 a

1. Edition

PES 4 A 95 D 410 RS 2685

RSV 400-1000 A 1 C 2187 L

supersedes

Komb.-Nr. 0 400 874 238

Liebherr D 904 NA 70 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,7-2,8 (2,65-2,85)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm1/100 strokes	cm <sup>-</sup> / 100 strokes 4	mm 2	cm <sup>1</sup> /100 strokes	mm 6
1000	9,7-9,8	7,9-8,1	0,35(0,6)			
400	6,1-6,3	1,0-1,6	0,35(0,55	,		
			:			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

1 Uppe	r rated speed		Interme	diate rated	speed	(4)	Lower	rated speed	(3) 10	rque control
Degree of deflection of control	Control rod travel	Control rod travel mm rev/min				Control- lever deflection	rev/min	Control rod travel	rev/min	Control rod travel mm
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
oose	800	0,3-0,7	-	-	-	ca. 23	400	5,7	1000	9,7-9,8
•	X =	2,5					400	6,1-6,3		
2a. 50	8,7 4,0 1230	1040-1050 1065-1095 0,3-1,4					<b>45</b> 5-5	5=2,0	430	10,9-11,5

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	Rotational speed limitat  Speed limitat  Rotational characteristics			Starting Idle	fuel delivery 5	4a) Idle stop	
Test oil t rev/min 1	emp 40°C (104°F) cm/100G strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min	cm <sup>1</sup> /1000 strokes	rev/min 8	Control root travel mm
1000	79,0-81,0 (77,0-83,0)	1040-1050*	600	66,5-69,5 (64,0-72,0)	100	125,0-135 (122,0-138 =15,5-15,7 mm RW	,0)	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2



## Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 2,2 d

2. Edition

En

Testoil-ISO 4113

PES 4 M 55 C 320 RS 152-1 RSF 375/2250 M 56

Komb.Nr. 0 400 074 96 3/

Sales model

0 400 074 962

supersedes 4.84 company Daimler-Benz

OM 601

54 kW

U.S.A.

0-90-180-270
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Note: Before starting testing, observe the e important instructions on the reverse.

Control rod travel

Port closing at prestroke

1- 3- 4 - 2

2,00-2,10 (1,95-2,15)

RW = 20,0-22,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm 1/100 strokes	mm	cm <sup>1</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	13,1+0,	3,4-3,5	0,25(0,3)			
375	6,4-6,6	0,5-0,6	0,10(0,15)			
1800 2200			0,25(0,3)			
	<u> </u>					

Set uniform delivery according to the values in

Checking values in brackets

### **B.** Governor Settings

Lower rated sp	eed		Upper rated sp	eed		Variations in co	ntrol rod trav	el
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever	mm	ten/wiu		rev/min	mm
1	2	3	4	5	6	7	8	9
8-12° ①	min.12,5	250	50° 🕖	12,3-12	,5 2200	(2)	100	min. 20,6
(2)	6,4-6,6	375	(8)	8,8-9,2	2500	(13)	1800	12,7-12,9
<u> </u>	**	400	l	_		<b>1</b> (14)		13,1-13,2
$\sim$	-	1		0-1,0	2950			,.
	2,5	630-730	ı	1	1		Switching po	oint
(5)	1 - , -		l (ii)	[	•	(6)	1	

## C. Settings for Fuel Injection Pump with Governor Mounted

Full load o	delivery (19)	Full-load speed 8a	Variations delivery	in fuel 17	Starting I	uel delivery	
Test oil te	mp 40°C (104°F)			18		1	Difference
rev/min	cm 1/1000 strokes	rev/min	revimin	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>1</sup> /1000 strokes	cm 1/1000 strokes
1	2	3	4	5	6	7	8
2200	36,0-38,0 (35,0-39,0)	2500* 8,8-9,2	1800	36,0-37,5	100	min. 55	6,0
	(33,0-39,0)	0,0-9,2		(35,0-38,5)	375	5,0-6,0 (4,5-9,0)	1.0
			1000	34,0-35,0 (33,0-36,0)	2500	21,0-25,0 (20,0-26,0)	2.5 (3.0) sieht
							8 a

Checking values in brackets

Ca . I rgm less control rod travel than in Column 2

6.84

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- 1. \*\* Adjust the idle speed auxiliary spring at N = 400 min<sup>-1</sup>in such a way that the control-rod travel is overpressed by 0.1 0.2 mm.
- Adjusting the idle control lever position
   At 1000 min<sup>-1</sup>, control-rod travel 1.9 2.0 mm.
- 3. Checking the idle speed auxiliary spring cut-off

Control lever position 46°. After the switchoff point (from the starting curve) up to 1000 min<sup>-1</sup>, no change in control-rod travel. Control lever position 30°. Rotational speed range 600-800 min<sup>-1</sup>, control-rod travel 10.0 mm.

4. Checking the pneumatic shut-off unit

Control lever at idle stop.

 $n = 375 \text{ min}^{-1}$  and pu = 450 mbar (vacuum) (338 mm Hg), the control-rod must move quickly to control-rod travel = 0 mm.

- 5. Overflow valve 1 469 990 351
- 6. \* Offsetting (difference) of start of fuel delivery between the maximum/minimum value 1° camshaft.
- 7. Adjust idle on the pneumatic idle speed boost box. In so doing release the lock nut.
- 8. Adjusting the pneumatic idle speed boost (PLA):

At 0.4 bar vacuum,  $n = 425 \text{ min}^{-1}$ , control-rod travel 8.0 - 9.6 mm (11-19 ccm/1000 strokes).

9. Checking for leaks (checking vacuum) in the PLA box

Trigger the PLA box with 0.8 bar vacuum via the three-way valve and pressure gauge. Using the 3-way valve, cut off the vacuum supply from the PLA and pressure gauge. Allowable pressure drop 30 mbar in 15 s.

10. FBG Adjustment

FBG adjustment and interlocking according to the average value for start of delivery from all cylinders, 19.5  $\pm$  0.2 (0.3) ° camshaft after cyl. 1.

11. Checking the regulator using the altitude-pressure compensator aneroid box

Rotational speed	Pressure (absolute)	Control deviation from
(min <sup>-1</sup> )	(mbar)	max. Control-rod travel (mm)
1 000	840	1.0 - 1.2 (0.95 - 1.25)
1 000	930	0.0 - 0.4 (0.0 - 0.45)
1 000	700	2.1 - 2.5 (2.05 - 2.55)

12. Pin projection = 16.55 + 0.55 mm

WPP 00 1/4 MB 3.0 m

3. Edition

PES 5 MW 55/320 RS 16 RW 375/2200 MW 28-1 0 403 245 013 0 403 245 014 - Sales model

supersedes 11.82 company Daimler Benz OM 617 A engine

Note: Before starting testing, observe the important instructions on the reverse. All test specifications are valid for easth Fuering edition Pump 7 est Benches and Testers

## A. Fuel Injection Pump Settings

Oort closing at prestroke

2,10-2,20

mm (from BDC)

Control rod travel

hne ALDA (2,05-2,25)					
Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
mm	cm 1/100 strokes	cm <sup>3</sup> /100 strokes	mm	cm 1/100 strokes	mm
2	3	4	2	3	6
13,5+0,1	5,15 - 5,25	0,25(0,3)			
5 <b>,7-</b> 5 <b>,</b> 8	1,0-1,1	0,10(0,15)			
		0,25(0,3)	ŀ		
		0,25(0,3)			
	Control rod travet mm 2 13,5+0,1	Control rod fravel  mm cm '/100 strokes  2  13,5+0,1  5,15 - 5,25	Control rod travel  mm cm '/100 strokes cm '/100 strokes 2  13,5+0,1 5,15 - 5,25 0,25(0,3)  5,7-5,8 1,0-1,1 0,10(0,15) 0,25(0,3)	Control rod travel  mm	Control rod travel    Fuel delivery   Difference   Control rod travel   Fuel delivery   Control rod travel   Fuel delivery   Control rod travel   Control ro

Set uniform delivery according to the values in [ \_\_\_\_\_\_]

Checking values in brackets

### **B.** Governor Settings

ohne ALDA

Lower rated sp	eed		Upper rated sp	eed		Variations in co	introl rod trai	vel
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever	mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
27-31	min.11 max.11	100 320	69 (8)	12,1-12	.3 2180	(12) (13)	100	20,5-21,5
<u> </u>	5,7 <b>-</b> 5,8	365	9	11,2	2300-2320	(14)	1600	13,1-13,3
<b>@</b>	-	-	<u> </u>	4,0	2620-2720		1000 Switching p	13,5-13,6
(5)	-	-	. (1)	0,0-1,0	2950			o O(240-330)

## C. Settings for Fuel Injection Pump with Governor Mounted

Full-load	delivery (19)	Full-load speed (8a)	Variations delivery	in fuel (17)	Starting I	luel delivery	
Test oil te	emp 40°C (104°F)		July 1	0	1	1	Difference
rev/min	cm 1/1000 strokes	rev/min	revimin	cm <sup>1</sup> /1000 strokes	rev/min	cm 1/1000 strokes	cm 1/1000 strokes
1	2	3	4	5	6	7	8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0 (52,0)	6,0 (2a)
			1000	51,5-52,5 (50,5-53,5)	365	10,0-11,0 (8,5-12,5)	1,0 (1,5) <sup>(5)</sup>
						(5,5-9,5)++	(1,5)
					2550	24,0-30,0 (23,0-31,0)	2,5 (6) (3,0)

Checking values in brackets

\* 1 mm less control rod travel than in Column 2

8.84

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1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fedérale d'Allemagne par Robert Bosch GmbH.

#### Testing with ALDA

Point	min-1	cm <sup>3</sup> /1000 strokes	Control-rod travel	Pressure (absolute)
18	1000	51,5-52,5	13,5 - 13,6 173	33 mbar (1300 mmHg)
		(50,5-53,5)		
	***			
18a	1000	41,0-43,0	- 10	67 mbar ( 800 mmHg)
		(40,0-44,0		,
19	2180	50,0-52,0	12,1 - 12,3 17	33 mbar (1300 mmHg)
		(49,0-53,0)		, <b>,</b>
12a	100	min. 55	20,5 - 21,5 17	33 mbar (1300 mmHg)
15	365	10,0-11,0 (8,5-12,5)	5,7 - 5,8 9	86 mbar ( 740 mmHg)

#### 1. Setting the idle stage

Text replaces Section 4.1 of Test Instructions VDT-W-420/300 En Supplement 2, 2. Edition.

Set control lever at advance angle  $69^{\circ}$ . Drive injection pump at  $1000 \text{ min}^{-1}$ . Screw the spring retainer in until control-rod travel 13.5-13.6 mm is reached.

Set control lever at advance angle 49°. Drive injection pump at 1000 min<sup>-1</sup>. Control-rod travel 8.8 - 9.5 mm must be reached.

#### 2. Setting the lower rated speed

Text replaces Section 4.3 of Test Instructions VDT-W-420/300 En Supplement 2, 2 Edition.

Drive injection pump at  $n = 800 \text{ min}^{-1}$ . Move the control lever back until control-rod travel 1.0 - 1.3 mm is reached.

The resulting control lever deflection must lie within the permissible limits. Fix the control lever in this position. Drive the injection pump at speed as per point 2, Section B of the Test Specification Sheet. Set the control-rod travel at adjusting screw (28).

### 3. Setting the idle auxiliary spring (70)

\*\* Set the idle auxiliary spring so that it just touches at n = 520 - 550 min<sup>-1</sup> at the end of the characteristic curve.

#### 4. Setting the sensing lever

Move the control lever to the full-load stop. Drive the injection pump at  $n=375\,\mathrm{min}^{-1}$ . Set the sensing lever so that the control-rod travel lies 0.1 (0.1 - 0.2) mm over full-load control-rod travel at  $n=1000\,\mathrm{min}^{-1}$ .

- 5. \*\*\* Correction of the injected fuel quantity at the correction screw of the ALDA aneroid box. Max. correction  $\pm$  0.75 mm controlrod travel.
- 6. Pin projection =  $16.65 \pm 0.1$  mm.
- 7. Stop check: Drive the injection pump at n = 200 min<sup>-1</sup>. Overbridge the elastic idle stop. The resulting control-rod travel may be at most 5 mm.
- 8. Check the pneumatic shutoff: Control lever in idle position.

  Drive the injection pump at n = 375 min<sup>-1</sup>. At Pu = 450 bar

  (338 mmHg) (vacuum) control rod must return quickly to controlrod travel 0 mm.
- 9. Range of adjustment idle full load = 38 42°.
- 10. \*\* Idle checking point.

WPP 001/4 MB 3,0 t

2. Edition

PES 5 MW 55/320 RS 16

RW 375/2200 MW 28-3

supersedes 2.83

0 403 245 020

0 403 245 021 - Sales model

engine

Daimler-Benz OM 617 A-USA 92 kW (125 PS)

Note: Before starting testing, observe the important instructions on the reverse.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Start-of-delivery adjustment and blocking 19.5° after start-ofdelivery cylinder 1.

A. Fuel Injection Pump Settings

Control rod travel

Port closing at prestroke

2,10-2,20 (2,05-2,25)

mm (from BDC)

ohne ALDA

19,5-22,5

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>1</sup> /100 strokes	cm 1/100 strokes	mm	cm <sup>4</sup> /100 strokes	mm
<b>1</b>	2	3	4	2	3	6
1000	13,5+0,	5,15-5,25	0,25(0,3)			
365	5,7-5,	8 1,0-1,1	0,1 (0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)		1	

Checking values in brackets

#### **B.** Governor Settings

ohne ALDA

Lower rated si	peed		Upper rated spe	eed		Variations in control rod travel			
Degree of deflection of control	Control rod travel	Rotational speed	1	Control rod travel	Rotational speed	i	Rotational speed	Control rod travel	
lever	mm	rev/min	lever	mm	revimin	•	rev/min	mm	
1	2	3	4	5	6	7	8	9	
27-31(1)	min.11	100	69 (7)	12,1-12	,3 2180	(12)	100	20,5-21,5	
27-310				44.0	2200 2220	13)	1600	12 1 12 2	
3	5,7-5,8	365	9		2300-2320 2620-2720		1000	13,1-13,3 13,5-13,6	
<u>(4</u>	-	-	1 10	0,0-1,0	2950		Switching po	) oint	
5	-	-	110	-	-	6	260-310	(240-330)	
	1	1 -	1	1	ł	t	1		

### C. Settings for Fuel Injection Pump with Governor Mounted

ohne ALDA

Full-load de	elivery (19)	Full-load speed (8a)	Variations delivery	in fuel (17)	Starting f	uel delivery	•
Test oil ten	np 40°C (104°F)			18		1	Difference
rev/min	cm <sup>1</sup> /1000 strokes	rev/min	rev/min	cm 1/1000 strakes	rev/min	cm 1/1000 strokes	cm 1/1000 strokes
1	2	3	4	5	6	7	8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600 1000	51,5-53,0 (50,5-54,0) 51,5-52,5 (50,5-53,5)	375	min. 55,0 (52,0) 10,0-11,0 (8,5-12,5) (5,5-9,5)++ 24,0-30,0 (23,0-31,0)	6,0 (2a) 1,0 (1,5) (1,5) 2,5 (3,0) (6)

Checking values in brackets

\* 1 mm less control rod travel than in Column 2

#### Testing with ALDA

Point	min-1	cm³/1000 strokes	Control-rod travel	Pressure (absolute)
18	1000	51,5-52,5	13,5 - 13,6 17	33 mbar (1300 mmHg)
	-	(50,5-53,5)		
	***		· · · · · · · · · · · · · · · · · · ·	
18a	1000	41,0-43,0	- 10	67 mbar ( 800 mmHg)
		(40,0-44,0		
19	2180	50,0-52,0	12,1 - 12,3 17	33 mbar (1300 mmHg)
		(49,0-53,0)		
12a	100	min. 55	20,5 - 21,5 17	33 mbar (1300 mmHg)
15	365	10,0-11,0 (8,5-12,5)	5,7 - 5,8 9	86 mbar ( 740 mmHg)

#### 1. Setting the idle stage

Text replaces Section 4.1 of Test Instructions VDT-W-420/300 En Supplement 2. 2. Edition.

Set control lever at advance angle 69°. Drive injection pump at 1000 min<sup>-1</sup>. Screw the spring retainer in until control-rod travel 13.5 - 13.6 mm is reached.

Set control lever at advance angle 49°. Drive injection pump at 1000 min<sup>-1</sup>. Control-rod travel 8.8 - 9.5 mm must be reached.

#### 2. Setting the lower rated speed

Text replaces Section 4.3 of Test Instructions VDT-W-420/300 En Supplement 2, 2 Edition.

Drive injection pump at  $n = 800 \text{ min}^{-1}$ . Move the control lever back until control-rod travel 1.0 - 1.3 mm is reached.

The resulting control lever deflection must lie within the permissible limits. Fix the control lever in this position. Drive the injection pump at speed as per point 2, Section B of the Test Specification Sheet. Set the control-rod travel at adjusting screw (28).

## 3. Setting the idle auxiliary spring (70)

\*\* Set the idle auxiljary spring so that it just touches at n = 520 - 550 min<sup>-1</sup> at the end of the characteristic curve.

#### 4. Setting the sensing lever

Move the control lever to the full-load stop. Drive the injection pump at  $n=375~\text{min}^{-1}$ . Set the sensing lever so that the control-rod travel lies 0.1 (0.1 - 0.2) mm over full-load control-rod travel at  $n=1000~\text{min}^{-1}$ .

- 5. \*\*\* Correction of the injected fuel quantity at the correction screw of the ALDA aneroid box. Max. correction  $\pm$  0.75 mm controlrod travel.
- 6. Pin projection =  $16.65 \pm 0.1$  mm.
- 7. Stop check: Drive the injection pump at n = 200 min<sup>-1</sup>. Overbridge the elastic idle stop. The resulting control-rod travel may be at most 5 mm.
- 8. Check the pneumatic shutoff: Control lever in idle position.

  Drive the injection pump at n = 375 min<sup>-1</sup>. At Pu = 450 bar

  (338 mmHg) (vacuum) control rod must return quickly to controlrod travel 0 mm.
- 9. Range of adjustment idle full load = 38 42°.
- 10. \*\* Idle checking point.

## **Test Specifications Fuel Injection Pumps** and Governors

**VDT-WPP 001/4** 

2. Edition

PES 6 A 100 D 410 RS 3020

EP/RSV 400-1100 A 7 B 700 L

supersed 10.74 companyJohn Deere engine 6404 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,0+0,1

mm (from BDC) 2

Port closing mark 14°

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/miñ	mm	cm <sup>1</sup> /100 strakes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	9	7,5 - 8,3				
	6 12	3,2 - 4,2 12,4 - 13,4				
200	9	4,0 - 5,2				

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Uppe	rated speed	1	Intermediate	e rated spe	eed	(4) Lowe	r rated spi	eed	(3) to	rque control
Degree of deffection of control lever	rev/min	Control rod travel mm 3	Degree of deflection of control lever	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever	rev/min 8	Control rod travel mm 9	rev/min	Control rod travel mm
ca. 66	1100 1120	12,0 6,2	without	auxol	iary sprir	ca. 26 g	400 150 400	6,3 19 - 21	1080	0
(5)	1100 1140 1240	11,5-12,5 2,0- 5,0 0,3- 1,0					430 500	6,0-6,6 3,0-4,6 0 - 1	-	-

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	oad stop	6 Rotational- speed limitat.		el delivery Bracteristics	Starting Idle	fuel delivery	Sa Idi	le stop
Test oil ten rev/min 1	np. 40°C (104°F) cm³/1000 strokes 2	Note: changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
1080	107,5-109,5	1110-1120+			100	15,6-17,6	400 cm <sup>3</sup>	11,5-15,5 / 1000
			1150	11,5 - 21,5				

Checking values in brackets

\* 1 mm less control rod travel then col. 2

## Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 3,0 t 1 2. Edition

En

PES 5 MW 55/320 RS 16

RW 375/2200 MW 29-1

supersed9.82

0 403 245 022

0 403 245 022 - Sales model

A. Fuel Injection Pump Settings

company Daimler-Benz engine OM 617A-USA 92 kW (125 PS)

Note: Before starting testing, observe the important instructions on the reverse.

All test specifications are valid for Posch Fuel Injection Pump Test Beriches and Testers

Start-of-delivery adjustment and blocking 19.5° after start-of-delivery cylinder 1

delivery cylinder 1.

Port closing at prestroke

2,10-2,20 (2,05-2,25)

mm (from BDC)

Control rod travel

ohne ALDA

19,5-22,5

Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
mm	cm <sup>-</sup> /100 strokes	cm1/100 strokes	mm	cm 1/100 strokes	mm
2	3	4	2	3	6
13,5+0	,1 5,15-5,25	0,25(0,3)			
5,7-5,8	1,0-1,1	0,1 (0,15) 0,25(0,3) 0,25(0,3)			
	travel mm 2 13,5+(	travel	travel mm cm /100 strokes 2 3 cm /100 strokes 4 0,25(0,3) 5,7-5,8 1,0-1,1 0,1 (0,15) 0,25(0,3)	travel	travel

Set uniform delivery according to the values in [ []... [ [ ]... [

Checking values in brackets

ohne ALDA

#### **B.** Governor Settings

Lower rated s	eneed		Upper rated	d coood		Variations in co	Ullile A		
Cower raieu :	speed		Chines sures	n aheen		Variations in control rod travel			
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod trave	
lever	mm	rev/min	lever	min	rev/min	i	rev/min	mm	
1	2	3	4	5	6	7	8	9	
27-31 (2	max.11	100 320 365	1	7 12,1-12 8 11,2 9 4,0	2300-2320 2620-2720		100 1600 1000	min. 55 13,1-13,3 13,5-13,6	
(4 (5	3 =	=	1	10 0,0-1, 11 -	2950	29	Switching p 0-310(2	i oint 40-330)	

### C. Settings for Fuel Injection Pump with Governor Mounted ohne ALDA

Full-load	delivery (19)	Full-load speed (8a) regulation	Variations delivery	in fuel (17)	Starting fuel delivery Idle				
Test oil te	emp 40 C (104 F)		ļ	1 (18)		1	Difference		
rev/min	cm <sup>1</sup> /1000 strokes	rev/min	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	cm 1/1000 strokes	cm <sup>3</sup> /1000 strol	kes	
1	2	3	4	5	6	7	8	i	
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0) 51,5-52,5	100 365	min. 55,0 10,0-11,0 (8,5-12,5)	6,0 1,0 (1,5)	(23)	
			1000	(50,5-53,5)	375 2550	(5,5-9,5)++ 24,0-30,0	(1,5)	(15)	
						(23,0-31,0)	(3,0)	(16)	

Checking values in brackets

\* 1 mm less control rod travel than in Column 2

6.84

**BOSCH** 

#### Testing with ALDA

Point	min <sup>-1</sup>	cm <sup>3</sup> /1000 strokes	Control-rod travel	Pressure (absolute)
18	1000	51,5-52,5 (50,5-53,5)	13,5 - 13,6 17	33 mbar (1300 mmHg)
18a	*** 1000	41,0-43,0 (40,0-44,0	- 10	67 mbar ( 800 mmHg)
19	2180	50,0-52,0 (49,0-53,0)	12,1 = 12,3 17	33 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5 17	33 mbar (1300 mmHg)
15	365	10,0-11,0 (8,5-12,5)	5,7 - 5,8 9	86 mbar ( 740 mmHg)

#### 1. Setting the idle stage

Text replaces Section 4.1 of Test Instructions VDT-W-420/300 En Supplement 2, 2. Edition.

Set control lever at advance angle  $69^{\circ}$ . Drive injection pump at  $1000 \text{ min}^{-1}$ . Screw the spring retainer in until control-rod travel 13.5 - 13.6 mm is reached.

Set control lever at advance angle 49°. Drive injection pump at 1000 min<sup>-1</sup>. Control-rod travel 8.8 - 9.5 mm must be reached.

#### 2. Setting the lower rated speed

Text replaces Section 4.3 of Test Instructions VDT-W-420/300 En Supplement 2, 2 Edition.

Drive injection pump at  $n = 800 \text{ min}^{-1}$ . Move the control lever back until control-rod travel 1.0 - 1.3 mm is reached.

The resulting control lever deflection must lie within the permissible limits. Fix the control lever in this position. Drive the injection pump at speed as per point 2, Section B of the Test Specification Sheet. Set the control-rod travel at adjusting screw (28).

### 3. Setting the idle auxiliary spring (70)

\*\* Set the idle auxiliary spring so that it just touches at n = 520 - 550 min<sup>-1</sup> at the end of the characteristic curve.

#### 4. Setting the sensing lever

Move the control lever to the full-load stop. Drive the injection pump at  $n=375\,\mathrm{min}^{-1}$ . Set the sensing lever so that the control-rod travel lies 0.1 (0.1 - 0.2) mm over full-load control-rod travel at  $n=1000\,\mathrm{min}^{-1}$ .

- 5. \*\*\* Correction of the injected fuel quantity at the correction screw of the ALDA aneroid box. Max. correction  $\pm$  0.75 mm centrol-rod travel.
- 6. Pin projection =  $16.65 \pm 0.1$  mm.
- 7. Stop check: Drive the injection pump at  $n = 200 \text{ min}^{-1}$ . Overbridge the elastic idle stop. The resulting control-rod travel may be at most 5 mm.
- 8. Check the pneumatic shutoff: Control lever in idle position. Drive the injection pump at  $n=375\,\mathrm{min}^{-1}$ . At Pu = 450 bar (338 mmHg) (vacuum) control rod must return quickly to control-rod travel 0 mm.
- 9. Range of adjustment idle full load = 38 42°.
- 10. \*\* Idle checking point.

## **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 VOL 4,5 g

2. Edition

En

PES 4 MW 100/320 RS 1102 RSV 300-1000 MW 1 A 315

0 403 474 001

supersed?s.84 company TD 45 engine 84 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings 2,80-2,90 Port closing at prestroke (2,75-2,95) mm

mm (from BDCbei RW = 9.0-12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm //100 strokes	cm <sup>-/</sup> 100 strokes 4	mm 2	cm <sup>1</sup> /100 strokes	mm 6
700*	12,1+0,1	11,3-11,5	,35(0,6)			
300	5,6-5,7	1,3-1,7	0,35(0,55)			
1000	12,1+0,1		0,55(0,7)			

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

1 Uppe	er rated speed		Intermed	tiate rated	speed	Lower rated speed			3 Torque control	
Degree of deflection	Control rod travel	Control rod travel			1	Control- lever		Control rod		Control rod travel
of control	mm	mm rev/min			Ì	deflection in degrees	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 12	300	5,1-5,2		
							300	5,6-5,7		
ca. 52	11,1	1040-1050 1055-1085					360-420=	2,0		: ·
	0,3-1,7	1200								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load slop	6 Rotational- speed limitat		iel delivery paracteristics	Starting t	uel delivery 5	(4a) Idli	e stop
Test oil t rev/min 1	cm //1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>1</sup> /1000 strokes	rev/min 8	Control rod travet mm
700	113,0-115,0 111,0-117,0)	1040-1050*	1000	112,0-116,0 (110,0-118,0)	300	13,0-17,0 (10,5-19,5)	300	5,6-5,7
n  = 1	e minimum full- 000 min/1. At t ding to test sp	he maximum 1	u11-1	control-rod trav pad stop, make t	el of he fu	12.6-12.7 1-load adj	mm wit ustmer	h t

Checking values in brackets

\* 1 mm less control rod travel than cot 2

8.84

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Alfemagne par Robert Bosch GmbH.

## **Test Specifications Fuel Injection Pumps** and Governors

WPP 001/4 MB 3,0 t 2 2 Edition

estoil-ISO 4113

PES 5 MW 55/320 RS 16-1 RW 375/2200 MH 28-3 0 403 245 025

supersed 8.84

companDaimler-Benz engine OH 617 A-USA

0 403 245 026- Sales model

92 kW (125=PS)

Note: Before starting testing, observe the important instructions on the reverse. All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Start-of-delivery adjustment and

blocking 19.5° after start-ofdelivery cylinder 1.

Port closing at prestroke

2,10-2,20 (2,05-2,25)

A. Fuel Injection Pump Settings

mm (from BDC)

ohne ALDA

19,5-22,	,5 <sup>Control rod travel</sup>
----------	----------------------------------

Rotational speed	Control red travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm '/100 strokes	cm 1/100 strokes	mm	cm 1/100 strokes	mm
1	2	3	4	2	3	6
1000	13,5+0,1	5,15-5,25	0,25 (0,3)			
365	5,7-5,8	1,0-1,1	0,1 (0,15	)		
1600			0,25 (0,3)			
2180			0,25 (0,3)			
			0,23 (0,3)			

Set uniform delivery according to the values in [\_\_\_\_\_\_

Checking values in brackets

#### **B. Governor Settings**

#### ohne ALDA

Lower rated sp	eed	<del></del>	Upper rated sp	eed		Variations in co	ntrol rod trav	el
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever	mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
,	min.11 max.11	100 320	69 🕡	12,1-12	,3 2180	@	100	20,5-21,5
	5,7-5,8 **	365	9	4,0	2300-2320 2620-2720	(13)	1600 1000	13,1-13,3 13,5-13,6
5	•	-	90	0,0-1,0 -	2950 -	6	Switching no 260-310	(240-330)

## C. Settings for Fuel Injection Pump with Governor Mounted

ohne ALDA

Full-load o	delivery (19)	Full-load speed 8a	Variations	in fuel (17)	Starting f	uel delivery	
Test oil te rev/min	mp 40°C (104°F) cm 1/1000 strokes	rev/min	rev/min	cm 1/1000 strokes		cm <sup>1</sup> /1000 strokes	Difference
1	2	3	4	5	6	7	cm <sup>3</sup> /1000 strokes 8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0 (52,0)	6,0
			1000	51,5-52,5 (50,5-53,5)	365 375	10,0-11,0 ( 8,5-12,5) ( 5,5-9,5)++	1,0 (1,5) (5 (1,5)
					2550	24,0-30,0 (23,0-31,0)	2,5 (3,0)

Checking values in brackets

\* 1 mm less control rod travel than in Column 2

#### Testing with ALDA

Point	min <sup>-1</sup>	$cm^3/1000 H$	RW	Pressure (absolute)
18	1000	51,5 - 52,5 (50,5 - 53,5)	13,5 - 13,6	1733 mbar(1300 mmHg)
18a	*** 1000	41,0 - 43,0 (40,0 - 44,0)	•	1067 mbar( 800 mmHg)
19	2180	50,0 - 52,0 (49,0 - 53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0 - 11,0 ( 8,5 - 12,5)	5,7 - 5,8	986 mbar (740 mmHg)

### 1. Adjusting the idle

Test supersedes Section 4.1 of test instructions VDT-W-420/300 Suppl. 2, Ed. 2.

Set the control lever to an angle of  $69^{\circ}$ . Operate the fuel-injection pump at 1000 min<sup>-1</sup>.

Screw in the spring retainer until a control-rod travel of 13,5 - 13,6 mm is reached.

Set the control lever to an angle of  $49^{\circ}$ . Operate the fuel-injection pump at 1000 min<sup>-1</sup>. Control-rod travel 8,8 - 9,5 must be reached.

### 2. Adjusting the lower rated speed

Text supersedes Section 4.3 of test instructions VDT-W 420/300 Suppl. 2, Ed. 2.

Operate the fuel-injection pump at  $n = 800 \text{ min}^{-1}$ . Take back the control lever until a control-rod travel of 1.0 - 1.3 mm is reached.

The resulting deflection of the control lever must be within the allowable tolerance. Fix the control lever in this position. Drive the fuel-injection pump at a speed according to Point 2 Section B of the test specification sheet. Set regulation at adjusting screw (28).

#### 3. Adjusting the idle-speed auxiliary spring (70)

Position the idle-speed auxiliary spring in contact as the characteristic curve levels off at n=520-550 min<sup>-1</sup>.

#### 4. Adjusting the sensing lever

Place the control lever against the full-load stop. Operate the fuel-injection pump at  $n=375\,\mathrm{min}^{-1}$ . Adjust the sensing lever so that the control-rod travel is 0.1 (0.1 - 0.2) mm above the full-load control-rod travel at  $n=1000^{-1}$ .

- 5. \*\*\* Correct the quantity of fuel injected at the correction screw of the ALDA aneroid box. Max. correction + 0.75 mm control-rod travel.
- 6. Pin projection =  $16.65 \pm 0.1 \text{ mm}$
- 7. Shutoff check: Operate the fuel-injection pump at n = 200 min<sup>-1</sup>. Force the control rod through the spring-loaded idle stop. The resulting control-rod travel must be max. 5 mm.
- 8. Test the pneumatic shutoff: Control lever in idle position.

  Operate the fuel-injection pump at n = 375 min<sup>-1</sup>. At 450 mbar

  (338 mmHg) (vacuum) the control rod must move briskly to control-rod travel 0 mm.
- 9. Control-lever range idle full load =  $38 42^{\circ}$ .

10. Testing and setting of control-rod travel sensor with evaluation circuit

K5/EES - RWG.00 RBN - 40

#### Receiving inspection:

Set control lever so that a voltage of  $2.1 \pm 0.005$  V is indicated on the digital voltmeter.

Set engine speed of 1000 1/min; fuel delivery of 27.5 - 28.5 ccm/1000 lifts must be reached.

Control lever at full-load stop (control-rod travel 13.5 - 13.6), voltage value 3.2 ± 0.08 V.

#### Setting the control-rod travel sensor:

At 1000 1/min set a fuel delivery of 27.5 - 28.5 ccm/1000 lifts with control lever. Move control-rod travel sensor until  $U = 2.1 \pm 0.005$  V is indicated (tighten fastening screws to 3 Nm). Control lever at full-load stop (control-rod travel = 13.5 - 13.6); voltage of  $3.2 \pm 0.04$  V must be reached.

11. \*\* Idle checking point

estoil-ISO 4113

## **Test Specifications Fuel Injection Pumps** and Governors

WPP 001/4 MB 3.0 k 3. Edition

En

PES 5 MW 55/320 RS 20

RW 375/2200 MW 27

0 420 081 017

 $1 - 2 - 4 - 5 - 3 = 0 - 72-144-216-288 \pm 0.5 (0.75)$ 

supersedes9.79

company Daimler Benz

OM 617 engine

Note: Before starting testing, observe the important instructions on the reverse. See Point 3
All lest specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

2,10-2,20 (2,05-2,25)

mm (from BDC)

21,0 mmControl rod travel

ofine ADA

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>4</sup> /100 strokes	cm³/100 strokes	mm	cm <sup>1</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	13,2+0,	3,8 - 3,9	0,25(0,3)			
375	6,6-6,8	0,6-0,7	0,1(0,15)			
1600	Abschn.	C. Sp. 4-5	0,25(0,3)			
2180	Abschn.	C. Sp. 4-5	0,25(0,3)			
	.,			,		

Set uniform delivery according to the values in

Checking values in brackets

#### **B.** Governor Settings

ohne ADA

Lower rated sp	eed		Upper rated sp	eed		Variations in co	ntrol rod tra	/el
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever	min	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
<u> </u>	11,0 6,6-6,8 **	385 -	(a)	12,4 <sup>+0</sup> , 11,5 4,0 0-1,0	2 2180 2280-2300 2670-2730 2950	(2) (3) (4)	100 1600 1000	20,5-21,5 13,0-13,2 13,2-13,3
(4) (5)	2,0	650-700	(1)	-	•	6	Switching p 250-3	oint 800 (230-320)

## C. Settings for Fuel Injection Pump with Governor Mounted

ohne AUA

Full-load o	delivery (19)	Full-load speed (8a)	Variations delivery	in fuel (17)	Starting f	uel delivery		
Test oil te	mp 40°C (104°F)	•	1	1 (18)	1	!	Difference	
rev/min	cm 1/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>1</sup> /1000 stroke	es
1	2	3	4	5	6	7	8	
2180	39,0 - 41,0 (38,0 - 42,0)	2280-2300* (2275-2305)	1600	39,0 - 41,0 (38,0 - 42,0)	100	mind. 57	6,0	(23)
			1000	38, 5 - 39, 5 (37, 5 - 40, 5)	375	6,0-7,0 (5,5-7,5)	1,0 (1,5)	(15)
					2550	14,5 - 20,5 (13,5 - 21,5)	2,5 (3,0)	(6)

Checking values in brackets

\* 1 mm less control rod travel than in Column 2



1. Testing of sections A, B and C should be done without the ADA aneroid box. When this test has been completed the ADA aneroid box is connected.

#### Testing the governor with ADA-aneroid box (147)

Engine speed Setting point Control-rod travel reduction from full-load control-rod travel

1000 min<sup>-1</sup>
840 mbar (630 mm Hg) 1,0 - 1,2 (0,95 - 1,25) mm
Checking point
907 mbar (680 mm Hg) 0,3 - 0,6 (0,35 - 0,65) mm

- 2. Pin projection = 16.65 + 0.05 mm.
- 3. Adjusting the idle stage

Text replaces section 4.1 of the test instructions.

Set the control lever to 30°.

Operate the fuel-injection pump at n = 800 min<sup>-1</sup>.

Screw the spring retainer (torque-control capsule) or the driver with a pin wrench KDEP 1064/1 or a 1/2" hexagon-socket-screw-key so far that a control-rod travel of 1.2 - 1.5 mm is attained.

Further test steps see Test Instructions VDT-W-420/300 En.

- 4. ++ At this engine speed exceed the control-rod travel by 0.4 ± 0.1 mm. Idle delivery must not be affected.
- 5. Adjustment angle: Stop...idle = 35°, idle...full load = 39°.
- 6. Sensing lever adjustment: Set the sensing lever at n = 375 min<sup>-1</sup> (control lever in full-load position). At this speed the control-rod travel must exceed the full-load control-rod travel at n = 1000 min<sup>-1</sup> by 0, 1 0, 3 (0, 1-0, 4 mm) mm.
- 7. Check the pneumatic shut-off:

Control lever in idle position. Operate the fuel-injection pump at  $n = 375 \text{ min}^{-1}$ . At  $p_u = 450 \text{ mbar}$  (338 mm Hg) (vacuum) the control rod must quickly return to control-rod travel 0 mm.

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 12.7 c

5. Edition

iPE 8 MW 100/720 LS 1010

Komb. 0 403 548 003

RQV 300-1250 MW 31

superseded 1.82 company: KHD

BF 8 L 413 F 235 kW (320 PS)

bei 2500 min

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres		3.10-3.20 mm (from BDQ)ei RW = 9.0-12.0 mm							
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6			
1250 300 850 500	12,2+0,1 6,4-6,6 12,7+0,1 9,7+0,1	1,25-1,65	0,35(0,6) 0,35(0,55 0,5 (0,7) 0,35(0,6)	)					

Adjust the fuel delivery from each outlet according to the values in [

### **8. Governor Settings**

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	mm (rave)	リdef	gree of flection control er	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	0
1	2	3	4		5	6	7	8	9	10	11
max.	1250 1500	15,2-17,8 0-1,0	3				ca. 15	300	min.8,4 6,8-6,9		
ca. 65	11,2 4,0	1290-1300 1375-1405				·	380-440	i	730=2,0		
							<b>3</b>				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		limitation intermediate speed	Fuel delivery characteristics (5a) high idle speed (5b)		Starting Idle switchin		Torque-control 5 travel	
rev/min 1	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	travel mm 9
LDA 1250	0,7 bar 130,0-132,0 (128,0-134,0)	1290-1300*	LDA 850	0,7 bar 130,5-134,5 128,5-136,5)	100	136,5-146,5 (133,5-149,5	1000	12,7+0, 12,4+0, 12,2+0,
			LDA 500	0 bar 84,5-86,5 (82,5-88,5)	300	12,5-16,5 (10,0-19,0	, ,	12,2+0,

Checking values in brackets

\* 1 mm less control rod travel than col. 2

BOSCH

Geschäftsbereich KM. Kundandienst. Kfz-Ausrüstung. < by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany. Imprimé en République Fédérale d'Allemagne per Robert Bosch GmbH.

## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

KHD 12,7 c

Gauge pressure = bar Gauge pressure = bar mm (1)  LS 1010 with MW 31  O,7 bar 0,3 11,9 - 12,0 10,4 - 10,6	Pump/governor	Setting	Measurement	Control rod travel-		
MW 31 0,3 11,9 - 12,0 10,4 - 10,6		Gauge pressure = bar	Gauge pressure = bar	mm (1)		
		0,7 bar	0,3 0,23	11,9 - 12,0 10,4 - 10,6		

Notes

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 0MB 8.1 c 1 4. Edition

PES 6 MW 100/720 RS 1012

ROV 425-1100 MW 35

supersedes 12.83

0 403 446 126

company: OM-Brescia

1-5-3-6-2-4

8365.25.522

 $0-60-120-180-240-300 \pm 0.50 (0.75)$ 

122 kW (152 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings 2,90-3,00

Port closing at preshoke

mm (from BDC) RW 9.0-12.0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,2+0,1	8,15-8,35	0,35(0,6)			
425	5,8-6,0	1,05-1,45	0,35(0,55			
700	11,1+0,1		0,5 (0,7)			
500	10,6+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

ı	Upper rated	speed		Intermediate	e rated sp	eed	Lower rated	speed	· · · · · · · · · · · · · · · · · ·	60141	
- 1	Degree of deflection of control	rev/min Control rod trave	mm -	Degree of deffection of control		Control rod travel	Degree of deflection of control		Control rod travel	Sliging	sleeve travel
ı	lever	mm.	rev/min (2a)	lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm
ļ	1	2	3	4	5	6	7	8	9	10	11
ı	max.	1100	15,2-17,8	-	-	•	ca. 14	425	5,8-6,0	425	1,8
		1300	0 - 1,0					100	min. 7,5		2,3-2,9 9,0-9,2
	ca. 48	9,2 4,0	1140-1150 1185-1215							1130	9,0-9,2
L		<u> </u>					<b>③</b>		j		

Terane control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Control 100 stop		Rotational-speed (2b) Fuel delivery characteristics (5) high idle speed (5b)		ldie -	fuel delivery 6	Torque- travel	control 5	
rev/min 1	cm³/1000 strokes	rev/min 4a	rev/min 4	cm <sup>3</sup> /1000 strokes	r <del>ev</del> /min	cm <sup>3</sup> /1000 strokes	rev/min 8	travel mm 9+0-1
LDA 1100	0,5 bar 81,5-83,5 (79,5-85,5)	1140-1150*	10A 700 1DA 500	0,5 bar 84,5-88,5 (82,5-90,5) 0 bar 67,5-69,5 (65,5-71,5)	100 425 100-	RW max. 19 min.160 (min.157) 10,5-14,5 (8,0-17,0)	700 1000	11,1

Checking values in brackets

\* 1 vmm less control rod travel than col. 2

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

OMB 8,1 c 1

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000	•		OND OST CI
Pump/governor	Setting	Measurement	diminution Control rod travel difference
	Gauge pressure =	bar Gauge pressure =	bar mm (1) .
RS 1012 with	0,25		10,9 - 11,0
RQVMW35		0,5	11,1 - 11,2
		0	10,6 - 10,7
,			

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 0MB 8.1 c

3. Edition

PES 6 MW 100/720 RS 1012

ROV 425-1000 MW 36-1

supersedes8.83

0 403 446 133

OM Brescia 8365.25.530

121,4 kW (165 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel injection Pump Settings

2,90-3,00 Port closing at prestroke

mm (from BDC) RW 9 - 12 mm

		Z 85-3 U51		1/10 2 - 15 11011					
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strakes:	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6			
1000	11,7+0,1	9,1-9,3	0,35(0,6)						
425 700 500	6,4-6,5 12,6+0,1 11,5+0,1		0,55,0,55 0,5,0,7) 0,35(0,6)						

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated	speed	1	Interregulate	e rated speed Lower			speed	Sliding	Sliding steeve travel		
Degree of deflection of control	rev/min Control rod travel	Control rod travel	Degree will deffection of control		Control rod travel	Degree of deflection of control		Control rod travel		ı O	
lever 1	mm 2	rev/min (28	lower 4	rev/min 5	mm (4)	lever 7	rev/min 8	mm (3	rev/min	11 .	
max.	1100 1200	15,2-17, <sup>®</sup> 0-1, <sup>©</sup>		-	_	ca. 26	<del>                                     </del>	6,4-6,5 min.8,0	425 500 050	1,8 2,3-3,0 8,6-8,7	
ca. 51	10,7 4,0	1040-1050 1120-1150		·		<b>(3</b> )	490-5	50 = 2,0			

Forque control travel a = 1.1

### C. Settings for Fuel Injection Pump with Fitted Governor

িগা-load delivery জনাrol-rod stop শুঙা oil temp. 40°C (104°F) (2)		Ratational-speed 20 Positation intermediate apped	Fuel deli- high idle :	very characteristics (5e)	Starting Idle switchin		Torque- travel	control 5
re/min	cm <sup>3</sup> /1000 strokes	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rov/min	cm³/1000 strokes	rev/min 8	travel mm
LDA 1000	0,6 bar 91,0-93,0 (89,0-95,0)	1040-4050 *	LDA 700	0,6 bar #00,0-104,0 (98,0-106,0)	100	RW 19-21 160,0-180,0 (157,0-183,0)	500 700	12,6 12,6 12,4
			LDA 500	0 bar 71,5-73,5 (69,5-75,5)		13,5-17,5 (11,0-20,0 345 (80-365)	950 1000	11,7 11,7

Checking values in brackets

\* 1 mm less control rod travel then col. 2

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

OMB 8.1 c

\_2-

Testoil-ISO 4113

500	increasing		UND O, I C
Pump/governur	Setting	Measurement	diminution , Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1012 with	0,36		12,2 - 12,3
RQV-MW 36-1		0,6	12,6 - 12,7
		0	11,5 - 11,6
		0,31	11,8 - 11,9
		<u> </u>	

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 5,5 g

n 2. Edition

Testoil-ISO 4113

PES 6 MW 90/720 RS 1015 0 403 446 146

RQV 300-1600 MH 49

superiedes 11.63

company:

engine:

IVECO-Fiat 8062.24.668

140 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at pres	troke	(2.45-2.65)	mm (from BDC)	mm (from BDC) RW = 9.0 - 12.0 mm							
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6					
1000	10,4+0,1	7,6 - 7,8	0,35 (0,0	)							
375 1600 500	6,6-6,7 10,4+0,1 8,9-9,0		0,35(0,59 0,5 (0,7	1 *							

Adjust the fuel delivery from each outlet according to the values in

\* Note: Idle adjustment must be made at 375 min/1. The rotational speed

B. Governor Settings shown on the name plate.

Upper rated s	peed	·	Intermediat	e rated sp	<del>00</del> 0	Lower rated	speed		Cildina	deave travel
deflection	rev/min Control rod trave	Control rod travel	Degree of deflection of control		Control rod travel	Degree of deflection of control	1	Control rod travel	Sliding sleeve travel	
lever		rev/min 28	lever	rev/min	mm (4)	lever	rev/min	mm (3	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1640 1900	15,2-17,8 0-1,0				ca. 16		6,6-6,7 min.9,0		
ca. 63		1640-1650 1770-1800								
						<b>3</b>	390-8	380		

Torque control travel a =

mm

### C. Settings for Fuel injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel delivery characteristics (Se high idle speed (Sb)		Starting idle switchis	• . •	Torque- travel	control 5
rev/min 1	cm³/1000 strokes	rev/min 49	rev/min 4	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
LDA 1000	0,5 bar 76,0-78,0 (74,0-80,0)	1640-1650*	LDA 1600 LDA 500	0,5 bar 82,0-86,0 (80,0-88,0) 0 bar 42,5-44,5 (40,5-46,5)	200 375	160,0-180,0 (157,0-183,0 10,0 - 14,0 (9,0-15,0)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

FIA 5,5 g

-2-

Testoil-ISO 4113

Pump/governor	Setting		Measurement	diminution Control rod travel- difference
	Gauge pressure =	bar	Gauge pressure = bar	mm (1) .
RS 1015 with	0,5			10,4 - 10,5
RQVMW 49			0	8,9 - 9,0
			0,21	10,0 - 10,1
			0,18	9,3 - 9,4

Notes.

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

## **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 RVI 5,5 a

3. Edition

En

PES 6 MM 80/320 RS 1104 RSV 300-1450 MW 2/801 0 403 476 013

supersede 1.84 RVI MD 060212 97,8 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,75-1,85 (1.70-1.90)

mm (from BDC)RW = 9.0-12.0 mm

Rotational speed @v/min	Control rod travel	Fuel delivery cm//100 strokes 3	Difference cm <sup>-/</sup> 100 strokes 4	Control rod travel mm	Fuel delivery  cm '/100 strokes 3	Spring pie tensioning (torque-control valve) mm
900	10,4-10,5	5,05-5,25	0,25(0,4)			
300	4,7-4,9	0,85-1,15	0,2(0,35)			
1450	9,4-9,5		0,35 (0,4	<b>5</b> )		

Adjust the fuel delivery from each outlet according to the values in

**B.** Governor Settings

Note: Adjuste the idle speed auxiliary spring touching, then turn back 1/4 turn

1 Uppe	er rated speed		Interm	ediate rat	ed speed	4)	Lower	rated speed	(3) to	rque control
Degree of deflection of control lever	travel mm	Control rod travet mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm	rev/min	Control rod travel mm
loose	800 x = 4	0,3-1,0 ,0				ca. 20	300 250	4,8 max. 6,4		10,4-10,5 10,0-10,2
ca. 58	3,9	1515-1525 1555-1585 1650							1450 1150	

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

<b>W</b>	ull-load stop emp=40°C (104°F)	6 Rotational speed limitat		iel delivery paracteristics	Starting t	fuel delivery 5	<b>49</b> ld	le stop
rev/min	cm <sup>1</sup> /1000 strokes	Note changed to ) rev/min 3	rev/min	cm <sup>-//</sup> 1000 strokes 5	rev/min	cm1/1000 strokes	rëv/min 8	Control root travel mm
900	50,5-52,5 (49,5-53,5)	1515-1525	* 1425	54,0-56,0 (52,0-58,0)	300	max. 15 mm RW 75,0-85,0 (70,0-90,0 8,5-11,5 (7,0-13,0	)	

Checking values in brackets

\* 1 mm less control rod travel than cot 2

7.84

Geschaftsbereich KH. Kundendienst: Kfz-Ausrustung. < 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

## **Test Specifications** Fuel Injection Pumps (1) PP 001/4 RVI 8,8 K 3 and Governors

PES 6 MW 100/320 RS 1016 RQV 300-1300 MW 25-3 0403 446 144 1-5-3-6-2-4 0-60-120-180-240-300 ± 0,50 (0,75) supersedes companyRVI engine MIDS 060212 107 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	10,5+0,1	8,25-8,45	0,35(0,6)			
300	5,7-5,8	0,95-1,35	0,35(0,55	)		·
900	10,5+0,1		0,5 (0,7)			
500	9,7-9,8					

Adjust the fuel delivery from each outlet according to the values in g

### **B. Governor Settings**

Upper rated s	peed		Intermediat	e rated sp	eed	Lower rated	speed		Stidings	leeve travel
deflection	rev/min Control rod travel mm	Control rod travel mm rev/min (28	of control	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	
1	2	3	4	5	6	7	8		10	11
max.	1300	15,2-17,8				ca.12	300	5,7-5,8		
	1650	0 - 1,0					200	min. 6,9		
ca. 61	9,5 4,0	1360-1370 1475-1505					325-	600		
					<u> </u>	<b>3a</b>				

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter	d stop	Rotational-speed (2b) limitation intermediate speed	Fuel deli-	very characteristics (5e speed (5b)	Starting Idle switchli	fuel dalivery 8	Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	l_	cm <sup>3</sup> /1000 strokes	rev/min	
LDA 1300	0,7 bar 82,5-84,5	1360-1370*	LDA 900	0,7 bar 79,5-83,5	100	95,0-105,0	8	9
1300	(80,5-86,5)	1300-1370	LDA	(77,5-85,5) 0 bar	300	(90,0-110,0) 9,5-13,5		
			500	54,5-56,5 (52,0-59,0)	100-	(7,0-16,0)		

Chucking values in brackets

\* 1 mm less control rod travel than col. 2

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

RVI 8,8 k3

-2-

Testoil-ISO 4113

Pump/governor	Setting	Measurement	Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
RS 1016			10,5 - 10,6
with MW 25-3	0,7	0,12	10,1 - 10,2
		0,10	9,8 - 9,9
		0	9,7 - 9,8

Notes.

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 4,5 K 1. Edition

En

PES 4 MW 100/320 RS 1116 RQV 300-1100 MW 51 0 403 444 108

0

1 '8

compension 45-EM engine 85 kW

1- 3- 4 - 2 0-90-180-270 ± 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	2,5+0,1	11,6-11,8	0,35(0,6)			
300	5,8-5,9	1,3-1,7	0,35(0,55			-
1000	2,5+0,1		0,55		5	
700	0,5+0,1					
	}					

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed			Stiding	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm 2	mm	29	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min	Control rod travel mm ( 9	3)	rev/min	mm 11
max.	1150 1350	5,2-17,8 0-1,0				(	a. 12	800	5,8-5,9	)		
ca. 52	11,5	140-1150 200-1230		:					•			
							<b>3</b>	30-45	50			

Torque control travel a =

mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil te		Rotational-speed (2b) limitation intermediate speed	Fuel deli- high idle :	very characteristics (Se speed (Se)	Starting Idle switching		Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5 .	6	7	8	9
LDA 700	0,75 bar 116,0-118,0 (114,0-120,0)	1140-1150*	LDA 1000 LDA 700	0,75 bar 117,0-121,0 114,5-123,5) 0 bar 79,0-81,0 (76,5-83,5)	100 300 100-2	130,0-140,0 127,0-143,0) 13,0-17,0 (10,5-19,5) 230(80-250)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testatn =

700

rev/min decreasing pressure - in bar gauge pressure

VOL 4,5 k

Testoil-ISO 4113

Pump/governor	Setting	Measuren	nent		Control	rod trave	diminuti 1- differen	,		
	Gauge pressure ≈	bar Gauge pr	essure =	bar	mm	(1)	·			
RS 1116										
with MW 51	0,75					12,5	- 12,	6	•	
			0,52			12,4	- 12,	5		
			0,26			10,6	- 10,	7		
	,		0			10,5	- 10,	6		

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 12,7 t

1. Edition

PE 8 MW 100/720 LS 1117 RQ 300/1000 MW 52-1 0 403 548 009

4 5.

}

compan KHD F 8 L 413 F 2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

3,10-3,20 Port closing at prestroke

RW = 9.0-12.0 mm

		3.05-3.25)	min (mon opc)		M - 3,0	-12,0 11811
Rotational speed rev/min	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
650	11,4+0,	1 10,6-10,8	0,35(0,6)			
300	7,5-7,6	1,1-1,5	0,35(0,55	)		
1150	10,0+0,	1	0,5 (0,7	•		
_				! ·		

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Checkin PRG che	ck (1)	Full-load Setting po	pint	Test spe	cifications (4)	Idle spe	_		cifications (5)	Torque	_
rev/min 1	Control rod travel mm	rev/min 3	centrel rod travel mm	Control red travel rnrn 5	rev/min 6	rev/min 7	Control rad travel	rev/min 9	Control rod	rev/min	Control rod travel mm
550	19,2-20,8	550	20,0	9,0	1195-1210	300	7,5	100	min.9,0	1150	10,0-10,1
				4,0	1240-1270			300	7,5-7,6	650	11,4-11,5
135	0 - 1,0							350-	380 = 2,0	850	10,5-10,8

Torque-control travel

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

elivery on ontrol lever 1P 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics		
cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rad travel cm <sup>3</sup> /1000 strokes:/ mm
106,0-108,0 (104,0-110,0)		1150	96,0-98,0 (93,5-100,5)	100 300 100-2	130,0-140,0 (127,0-143,0) 11,0-15,0 (8,5-17,5) 30 (80-250)
	ontrol lever ip 40°C (104°F) (2) cm³/-1000 strokes 2	ontrol lever (2) (3a)  cm <sup>3</sup> /-1000 strokes rev/min 3	ontrol lever (2) (3a) real deliver (2) (3a) (3a) (3a) (3a) (3a) (3a) (3a) (3a	ontrol lever (2) (3a) (3b) (cm³/-1000 strokes 2 (106,0-108,0) (150 (150 (150 (150 (150 (150 (150 (150	ontrol lever (2) (3a) (3a) (3b) (3b) (3b) (3b) (4b) (104°F) (2b) (104°F) (2b) (3b) (3c) (3b) (3c) (3c) (3c) (3c) (3c) (3c) (3c) (3c

Checking values in brackets

10.84

Geschaftsbereich KH Kundendienst Ktz-Ausrustung
1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1 Printed in the Federal Republic of Gormany
1980 by Robert Bosch GmbH.

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 13.4 a

2. Edition

PE 8 MW 100/720 LS 1118 RQV 300-1150 MW 56 0 403 548 007

supersed 84 companyKHD engine BF 8 L 513 222 kW

1-8-7-2-6-5-4-3

 $0-45-90-135-180-225-270-315 \pm 0,50 (0,75)$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
3,10-3,20
(3,05-3,25)
mm mm (from BDC) RW = 9,0-12,0 mm

Rotational <del>speed</del> rev/min 1	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,2+0,1	13,3-13,5	0,35(0,6)			
300 1150 450	8,7-8,8 13,6+0,1 13,2+0,1		0,35(0,55 0,5 (0,7)	1		

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Upper rated s	ection Control travel mm rev/min 2s 3			Intermediate rated speed					Sliding	leeve travel
deflection	Control	travei	Degree of deflection of control		Control rod travel	Degree of deflection		Control rod travel	Sildings	1
		rev/min 28	lever	rev/min	mm (4)	of control lever	rev/min	mm (3	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.						ca. 22	300	6,7-6,8		
ca. 55	12,6 4,0	1190-1200 1300-1330					320-6	550		
						<b>3</b>				

Torque control travel a = 0,6

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load ( Control-re Test oil te		Rotational-speed 2b limitation intermediate speed	Fuel deli- high idle :	very characteristics (5a)	Starting Idle switching	• . •	Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 4a 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm 9
LDA 700	0,8 bar 133,0-135,0 (131,0-137,0)	1190-1200*	LDA 1150 LDA 450	0,8 bar 129,0-131,0 (126,5-133,5) 0 bar 104,0-106,0 (101,5-108,5)	300	140-150 (137-153) 16,0-20,0 (13,5-22,5)	1000 750 900	13,6+0,1 14,2+0,1 13,8+0,3

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

KHD 13.4 a

-2-

Testoil-ISO 4113

500			KNU 13,4 a
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
····	Gauge pressure = ba	Gauge pressure = bar	mm (1) .
Pumpe LS 1118	0,8		14,2 - 14,3
with MW 56		0,36	13,9 - 14,0
		0,26	13,4 - 13,5
		0	13,2 - 13,3

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

## **Test Specifications Fuel Injection Pumps** and Governors

WPP 001/4 MB 11.8 a 1 3. Edition

PE 6 P 110 A 720 RS 15

RQ 250/1100 PA 111 DR

supersedes 3.82

Komb.-Nr. 0 401 846 194

Daimler-Benz OM 355

154 kW (210 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(2.75-2.95)

mm (from BDC)

		- 970 E 9007_				
Rotational speed	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
	2""	om / fou strokes	100 Strokes	2	2	i a
<u>'</u>	12	ļ <u> </u>	<b></b>	<del> </del>	3	0
1090	12,0+0,	10,0-10,2	0,3(0,6)			
250	7,9-8,1	1,7 - 2,3	0,3(0,5)			
	_			1	1	<u> </u>

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Checkin	g of slider	Full-load	speed re	gulation		Idle spec	ed regula	stion		Torque o	control
ļ		Setting po	oint	Test specifications		Setting point		Test specifications		1	
rev/min 1	Control rod travel mm ?	rev/min 3	Control rod travel rom	rev/min 5	Control rod travel mm 6	rev/min 7	Control red tra <del>vel</del> rmm 8	rev/min 9	Control rod travel mm 10	rev/min	Control rod travel mm 12
600	15,5-16,5	600	16,0	11,0 4,0 1300		•		250	mind. 7,0 5,9-61 25 = 2,0	1090 700 450	12,0-12,1 12,3-12,4 12,6-12,7

Torque-control travel on flyweight assembly dimension a =

Speed regulation A1135 - 1150 min-1

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp 40°C (104°F)	Control rod step	Fuel deliv	very characteristics	Starting	Starting fuel delivery		
rev/min	cm <sup>1</sup> /- 1000 strokes 2	rev/min 3	rey/min	cm³/~1000 strokes 5	rev/min 6	cm <sup>3</sup> /100 strokes 7		
1090	100,0 - 102,0 ( 98,0 - 104,0)		700 450	96,0 - 99,0 (94,0 - 101,0) 90,0 - 94,0 (88,0 - 96,0)	100	150,0-170,0 (146,0-174,0)		

Checking values in brackets

5.84

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Festoil-ISO 4113

## **Fuel Injection Pumps** and Governors

**VDT-WPP 001/4** 1. Edition

PES 8 P 100 A 921/5 RS 286

.. 920/5 RS 286/34

EP/RSV 350-1050 PO/392 DR 350-1200 PO/394 DR 350-1050 PO/409 DR

supersedes

company: IHC - USA **DVT 800** 

s. WPP 110/2, 3. Ausgabe! 1-8-4-2-7-3-6-5 je 45° 1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

2.8 + 0.1

mm (from BDC)

Checking tolerance + 0,15 -0,05

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /1C0 strokes	cm³/ 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	12	11,4 - 12,0	0,4			
600	15	16,2 - 17,8				
200	6	2,9-3,9		1	ì	
	ì					

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

P 0/392 DR

Upper Degree of deflection of control lever	rated speed rev/min 2	Control rod travel mm 3	Intermediate Degree of deflection of control lever	Degree of Control rod I deflection travel control			1 Lower rated speed Degree of deflection of control lever rev/min 8 9			que control Control rod travel mm
ca. 49	1050 1150 1230	16,0 10,3 3,9	without	auxo	liary spr	ca. 26 ng	350 150	6,0 19 - 21	1030	0
(5)	1050 1150 1200	ca. 9,0 ca. 3,0 0,3-1,0	with au	ıxilia	ry spring		350 460	5,7-6,3 0 - 1	450	1,1-1,3

The numbers danote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-l	pad stop	6 Rotational- speed limital. (3a) Fuel delivery characteristics			Starting Idle	fuel delivery	5a idle stop	
Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes 1 2		Note: changed to rev/min 3	rev/min	cm³/1000 strokes	rev/min cm³/1000 strokes		rev/min	Control rod travel mm
1050	69,0 - 71,0	1100-1110+	800	91,0 - 95,0	100 350	190 - 230 8 - 11		
			145	5,0 - 11,0				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

(1) Upper	rated spec	ed	Intermediate	rated spe	eed	(4) Lowe	r rated sp	eed	(3) To	que control
Degree of deflection of control lever	rev/min	Control rod travel mm 3	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
ca. 64	1200 1350	16,0 9,4	without	21170	liary spri	ca. 34	ļ	6,0	1200	0
ca. <i>5</i> 5	1450 1200	3.2 ca. 8,6		, auxu	ilary spr	lly	150 350	19 - 21 5,7-6,3		
(5)	1310 1400	ca. 3,0	with au	ıxiliaı	ry spri <b>ng</b>		540	0 - 1	500	0,5-0,7

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	load stop	6 Rotational- speed limitat		el delivery Bracteristics	Starting	fuel delivery	5a idle stop	
Test oil temp 40°C (104°F)  rev/min		Note changed to rev/min	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000@rokes 7	rev/min	Control rod travel mm
1200	65,5 - 67,5	1250-1260+	850	76,5 - 80,5	100 350	190 - 230 8 - 11		
<del></del>			310	5,0 - 17,0		·		

Checking values in brackets

\* 1 mm less control rod travel than col 2

### **B.** Governor Settings

### P 0/409 DR

$\sim$	rated spee	d	Intermediate	e rated spe	ed	(4) Lowe	r rated sp	eed	(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	Control rod travel
<u> </u>	2	3	4	5	6	7	8	9	10	11
ca. 45	1050 1120	16,0				ca. 29	350	6,0		
<u> </u>	1190	11,0 4,2			iary spri	ng	150	19 - 21	1030	0
ca. 44	1050	ca. 9,8	with au	xiliar	y spring	İ	350	5,7-6,3	500	1,3-1,5
(5)	1150 1250	ca. 3,8 1,0-2,0					380 420	3,5-4,8 1,0-2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-l	oad stop	6 Rotational- speed limitat		el delivery aracteristics	Starting	fuel delivery	5a Idle stop	
Test oil temp 40°C (104°F) rev/min cm³/1000 strokes 1 2		Note changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes	rev/min 6	cm³/1000 <b>G</b> rokes 7	rev/min	Control rod travel mm
1050	81,5 - 83,5	1090-1100*	750	103,5 - 107,5	100 350	190 - 230 8 - 11		
_			1150	5,0 - 17,0				

Festoil-ISO 4113

## **Test Specifications** Fuel injection Pumps 1 and Governors

VDT-WPP 001/4 STE 10,0 C 5. Edition

PE 8 P 110 A 221 LS 331 ROV 250-1300 PA 315 DR

supersede5 .80

1 - 5 - 4 - 8 - 6 - 3 - 7 - 2 je 45°!

companyS teyr engine: WD 815.60 (320 PS)

At test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2.8 + 0.1

mm (from BDC)

Checking tolerance + 0.15 -0.05

Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 8
	13, 1 - 13, 3	0,4			
7 - 8	1,0-2,0	0,4			
	travel mm 2 13,1-13,2	travel cm <sup>3</sup> /100 strokes 2 3 13,1-13,2	travel cm <sup>2</sup> /100 strokes cm <sup>2</sup> /100 strokes 2 13,1-13,2 13,1-13,3 (),4	travel cm²/100 strokes cm²/ 100 strokes 2 cm²/ 100 strokes 4 cm²/ 100 strokes 2 cm²/ 100 strokes 4 cm²/ 100 strokes 2 cm²/ 100	travel   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes

Adjust the fuel delivery from each outlet according to the values in [

### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	ed	Lower rated	speed		Sliding	leave trave!
deflection of control	rev/min Control rod travel mm 2	travel	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm: 3	rev/min	0
ca. 66	1320 1400 1460 1560	15,0-17,6 7,2-12,2 1,0-7,6 0	•	•	-		100 250 400 660	6,2-7,6 4,8-6,1 1,8-3,2 0	450	0,5-1,2 2,9-2,5 5,4-5,8 8,3
						<b>3</b>				

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel delic high idle s	very characteristics (5a)	Starting Idle switching	• . •	Torque-control 5 travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min cm³/1000 strokes		rev/min 8	travel mm
LDA 1300 ( inci	0,5 bar 131,0-133,0 ease by <sup>±</sup> 3,0	1330-1345 <b>*</b> cm³)	LDA 1300	bar 112,9-116,0	100	15,0 - 17,0		

Geschäftsbereich KH. Kundendienst, Kfz-Ausrustung.
C by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

Chucking values in brackets

\* 1 mm less control rod travel than col. 2

J6

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

STE 10,0 c

-2-

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Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
331 with 315 DR	0,245		- 0,1
		0,14	- 1,2

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

2

## Test Specifications Fuel Injection Pumps (2) and Governors

40

WPP 001/4 MB 11,4 1 12

1. Edition

<u>En</u>

PES 6 P 110 A 820 LS 442 Komb.-Nr. 0 402 046 306

RQ 300/1100 PA 691-1

supersedes \_

company: Daimler-Benz engine OM 407 H

177 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

3,2-3,3 3,15-3,35)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,3+0,1	12,5-12,7	0,4(0,8)			
300	7,7-7,9	1,3-1,9	0,4(0,7)			
600	-	C, Sp 4 u. 5	0,6(0,9)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

PRG che	Control rod		•	•	cifications (4) rev/mir. 6	Idle spee Setting p rev/min 7	Control rod travel	Test spe	cifications 5 Control rod travel mm	rev/min	Control rod (3)
600	13,0-14,0	600	13,5	10,3 4,0 1350	1130-1140 1175-1215 0-1,5		7,8		min.9,4 7,7-7,9 05=2,0	•	e c

Torque-control travel on flyweight assembly dimension a ≈

mm

1130-1140 min<sup>-1</sup>

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

	delivery on control lever pp. 40°C (104°F)	Control rod stop 3a	Fuel deliv		Starting f	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	Control rad travel cm <sup>3</sup> /1000 strokes / mm
1100	125,0-127,0 (122,5-129,5)	-	600	110,0-114,0 (107,0-117,0)	100	130.0-150,0 (126,0-154,0) ** See page 2

Checking values in brackets

\*\* The controller is equipped with a starting device that depends upon the temperature (TAS).

Instructions for adjusting the starting flow:

Adjust the starting flow without the TAS with the control-rod plug cap. Then put on the TAS and adjust a control.rod travel of 11.8 - 11.9 mm at room temperature.

## Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 14,9 c 1

1. Edition

PES 8 P 120 A 320 RS 466 RQV 275-1050 PA 665-1 Komb.-Nr. 0 402 048 043 1-8-4-2-7-3-6-5 je 45° ± 0,5° (± 0,75°) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

companyRVI engine: MIVS 083530 280 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve)  mm 6
9,7-9,8	19,0-19,2	0,5(0,9)			
3,3-3,5	1,7-2,3	0,8(1,2)	<b></b>		
	mm 2 9,7-9,8	mm cm³/100 strokes 3 19,0-19,2	mm cm³/100 strokes 100 strokes 4  9,7-9,8 19,0-19,2 0,5(0,9)	mm cm³/100 strokes 2 cm³/ 100 strokes 4 mm 2 2 9,7-9,8 19,0-19,2 0,5(0,9)	mm cm³/100 strokes 2 19,7-9,8 19,0-19,2 0,5(0,9) travel mm cm³/100 strokes 2 0,5(0,9)

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Upper rated	peed			Intermediate	rated sp	eed	Lower rated	speed		Citation	lance travel
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod travet mm rev/min 3		Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	mm
max. ca. 64	8,7	15,2-17 1105-111 1175-120 0-1,0	15 )5	-	-	-	ca. 9 280-400	275	min.5,1 3,3-3,5	275 450	1,5-1,6 3,4-3,8 5,8-6,0 7,7

Torque control travel a = - mn

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		intermediate speed	high idle	very characteristics (5e)	Starting Idle switching	• . •	Torque- travel	control (5)
rev/min t	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
LDA 1050	0,7 bar 190,0-192,0 (187,0-195,0)	1105-1115*	LDA 650 LDA 500	0,7 bar 172,0-178,0 (169,0-181,0) 0 bar 116,0-118,0 (113,0-121,0)		135,0-155,0 (131,0-159,0		-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

RVI 14,9 c 1

Testatin -

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1)
PES 8 PRS 466 + RQVPA 665-1	0,70	0 0,20 0,16	9,7-9,8 7,8-7,9 9,2-9,3 8,3-8,5

Notes

(1) when n

rev/min and gauge pressure =

bar ( maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 MB 12,8k

2. Edition

<u>En</u>

Testoil-ISO 4113

PE 8 P 100 A 320 LS 810 RSV 575-1200P1/820
Komb.-Nr. O 401 878 098 PMA 820

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^{\circ} \stackrel{+}{=} 0,5^{\circ} (\stackrel{+}{=} 0,75^{\circ})$ 

supersed 4:0.79
companDaimler-Benz
engine OM 402
(147,1kW-200PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke (3)

3,40-3,50 (3,35-3,55) mm (from BDC)

Zv1.8

Rotational speed rev/min t	Control rod travel	Fuel delivery cm '/100 strokes 3	Crifference cm <sup>-y</sup> 100 strokes 4	Control rod travel mm 2	Fuel delivery cm*/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1180	9.6-9.7	8,6 - 8,8	0,3(0,6)			
575	5,2-5,4	0,5 - 0,9	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm		interm	ediale rat	ed speed	Control- lever dellection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	3 To	rque control Control rod travel mm
loose	800 x =	0,3-1,0 6,0	-	-	•	ca.28	575 5 <b>75</b>	5,3 5,2-5,4 = 2,0		-
ca.54	1245-12	225 = 8,6 260 = 4,0 0,3-1,					580-640	= 2,0		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

<b>U</b>	ill-load stop emp. 40°€ (104°F)	6 Rotational- speed limital		uel delivery naracteristics	Starting fi	fuel delivery 5	<b>49</b> ld	le stop
rev/min	cm%30 strokes	Note changed to ) rev/min 3	rev/min	cm <sup>-/</sup> 1000 strokes 5	rev/min 6	cm/1000 strakes 7	rev/min 8	Control root travel mm
1180	86,0 - 88,0 (84,0 - 90,0)	1215-1225*	-	-	•	•	•	-

Checking values in brackets

\* 1 mm less control rod travel : ...in col 2

9.84

J12

J12

## Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 12.8 b 3

1. Edition

PE 8 P 100 A 320 LS 810

RQV 300-1250 PA 227 R

Komb.-Nr. 0 401 848 041

supersedes -

company: Daimler-Benz

OM 402

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

	stroke	3,4-3,5 (3.35-3.55)	mm (from BDC)			•
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /1 <b>00 s</b> trokes 3	100 strokes	mm 2	cm³/100 strokes 3	mm 6
1250	10,3+0,1	10,0-10,2	0,3(0,6)			
300	7,4-7,6	1,7-2,3	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in E

### **B. Governor Settings**

Upper rated	speed			Intermediate	rated sp	eed		Lower rated	speed		Cliding	10000 100001
Degree of deflection of control lever	Control rod travel	Control rod travel mm rav/min 3	(3) (3)	Degree of deflection of control lever	rev/min 5	Control rod travel mm	9	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	mm
max.	1250	15,2-17	,8	•	-	-		ca. 12		min.9,0		0,7-1,0
ca. 66		1330-13	60						300 630-6	7,4-7,6  90= 2,0		3,3-3,5 4,7-5,1 8,0
						Į Į		<b>3</b>				

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roo Test oil ten		Rotational-speed (26) limitation intermediate speed	Fuel deli- high idle s	very characteristics (5e)	Starting Idle switching	. •	Torque- travel	control (5)
rev/min	cm³/1000 strokes	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	_
1250	100,0-102,0 (98,0-104,0)	1290-1300*	600	75,0-80,0 (72,5-82,5)	100	120,0-140,0 (116,0-144,0	-	• •

Checking values in brackets

\* 1 mm less control rod travel than col. 2

<u>J13</u>

## Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 MB 9,6 b

7. Edition

En

PE 6 P 100 A 320 LS 818 Komb.-Nr. 0 401 876 183

RSV 350-1250 PO/810

supersede 2.83
company Daimler-Benz

engine OM 401

141 kW (192 PS) (1) 129 kW (175 PS) (2)

1-6-3-5-2-4

0-75-120-195-240-315° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuei Injection Pump Settings

Port closing at prestroke

3,4-3,5 (3,35-3,55)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm //100 strokes 3	Difference cm <sup>-/</sup> 100 strokes	Control rod travel mm	Fuel delivery  cm '/100 strokes	Spring pre-tensioning (torque-control valve) mm
1230	10,3+0,1	10,2-10,4	0,3(0,6)			
350	7,2-7,4	1,4-2,0	0,3(0,5)			
						!
						ļ

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

	er rated speed	rev/min  Control rod	Interme	diale rated	speed	(4)	Lower	rated speed	(3) 10	rque controt
Degree of deflection of control lever	travel mm	travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-	-	<del>-</del>	ca. 34	350	7,3	-	-
	X =						350	7,2-7,4		
ca. 62	9,3 4,4 1400	1280-1290 1360-1380 0,3-1,7					500-5	50 = 2,0 **		

Set idle-speed auxiliary spring at 2 mm control-rod travel.

## C. Settings for Fuel Injection Pump with Fitted Governor

	emp 40°C (104°F)	opeco minute.		uel delivery paracteristics	Starting (	uel delivery 5	<b>49</b> ld	e stop
rev/min	cm /1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm //1000 strokes 5	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	Control rod travel mm
1230 (1)	102,0-104,0 (100,0-106,0)	1280-1290*	-	-	100	140,0-160, (136,0-164	0 - •0)	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH, Postfach 50, 0-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fedérale d'Allemagne par Robert Bosch GmbH.

(1) Upper	rated speed	!	Intermediate	e rated spe	ed	4 Lowe	r rated spe	ed	(3) To	que control
Degrae of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.63	1250	14,0			1 •	ca. 31	350	5,9	-	-
	1350 1450	8,7 2,8	i		liary spri	ing 	100	19-21		
ca.60	1250 1360 1430	ca.10,8 ca. 4,4 0,3-1,0	with au	ıxilia#	ry spring		350 450 500	5,6-6,2 0,9-3,1 0-1,0		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Purnp with Fitted Governor

2 Full le	oad slop	6 Rotational- speed limitat		(3a) Fuel delivery characteristics		fuel delivery	(5a) Idle stop	
fest oil fem rev/min t	p 40°C (104°F) cm³/1000 strokes 2	Note changed to rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes	rev/min 8	Control rod travel mm 9
1230 (2)	93,0-95,0 (91,0-97,0)	1280-1290*	-	<b>-</b>	100	110,0-130,	-	-
			6					

Checking values in brackets

Testoria () 4113

\* 1 mm less control rod travel than col 2

### **B.** Governor Settings

Upper Degree of deflection of control lever	rated speed	Control rod travel	Intermediate Degree of deflection of control lever	•	Control rod travel	Degree of deflection of control lever	rated spe	Control rod travel		que control Control rod travel
1	2	3	4	5	6	7	8	9	10	11
								•		
									:	
(5)							;			

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-I	oad slop	6 Rotational 3a Fuel delivery characteristics			Starting	fuel delivery	(5a) Idle stop	
Test oil ten rev/min 1	op 40°C (104°F)  cm 1/1000 strokes 2	Note changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	um³/ 1000 strokes 7		Control rod travel mm 9
				-				

## Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 MB 12,8 c 1

2. Edition

PE 8 P 100 A 320 LS 819 Komb.-Nr. 0 401 878 085

RSV 350-1250 P0/810 POA 810

supersedes
Daimler-Benz

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

om 402 engine 256 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

3,4 -3,5
Port closing all prestroke (3,35 -3,55)

mm (from BDCZy1. 8

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (forque-control valve)
rëv/min 1	mm <b>2</b>	cm*/100 strokes	100 strokes	mm 2	cm /100 strokes	mm .
1230	10,2+0,1	10,0-10,2	0,3(0,6)			76
350	7,4-7,6	1,5- 2,1	0,3(0,5)			
			·			

Adjust the fuel delivery from each outlet according to the values in E

### **B.** Governor Settings

(1) Uppe	rated speed		Interme	diate rated	speed	(4)	Lower	rated speed	(3) to	rque cantrol
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm	rev/min	Control rod travel mm:
loose	800 × **	0,3-1,0 5,0	-	-	-	ca.38	350	7,5 **	. ,	
ca.66	9,2 5,0 1450	1260-1270 1330-1350 0,3 - 1,4					500-560	=2,0		

the numbers denote the sequence of the tests Set idle-speed auxiliary spring at 2 mm control-rod travel.

### C. Settings for Fuel Injection Pump with Fitted Governor

9	ull-load stop emp 40°C (104°F)	Rotational- speed limitat		uel delivery naracteristics	Starting (	uel delivery 5	<b>43</b> ld	e stop
rest oil (i	cm//1000 strokes	Note changed to ) rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min	cm//1000 strokes 7	rev/min 8	Control rod travel /mm
1230	100,0-102,0 ( 98,0-104,0)	1260-1270*	-	•	100	110,0-130 (106,0-134		_
							,	

Checking values in brackets

\* 1 mm less control rod travel than cot 2



## **Test Specifications Fuel Injection Pumps** and Governors

WPP 001/4 MB 12.8 n 4. Edition

Testoil-ISO 4113

PE 8 P 100 A 320 LS 819

RSV 350-1250 PO/822

supersedes7.83

8 - 7 - 2 - 6 - 3 - 5 - 4 - 1 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

company: Daimler-Benz OM 402

Komb.-Nr. 0 401 878 107

165 kW (224 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings Port closing at prestroke (3.35-3.55) mn

mm (from BDC) 7v1 Q

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery cm <sup>3</sup> /160 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	9,6-9,7	8,7 - 8,9	0,3(0,6)			
350	7,5-7,7	2,1 - 2,5	0,3(0,5)			

Adjust the fire delivery from each outlet according to the values in

### **B.** Governor Settings

1.	rated speed		Intermediate	rated spe	ed	4 Lowe	r rated spe	eed	3 To:	que control
Degree of deflection of control lever	fêv/min 2	Control rod travel mm 3	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-	-	-	ca.31	350	7,6	1230	9,6+0,1
	x = 4	5					** 450-5	10 = 2,0	1050 850	9,9+0,2 10,3+0,2
®∙.58	8,6 4,0 1450	1270-1280 1330-1345 0.3 - 1.4								

<sup>\*\*</sup> Set idle-speed auxiliary spring at 2 mm control-rod travel. The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-lo	oad stop	6 Rotational- speed limitat.		el delivery aracteristics	Starting Idie	fuel delivery	5a Idle stop	
Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes 1 2		Note: changed to rev/min 3	rev/min cm³/1000 strokes 4 5		rev/min cm³/1000 strok		rev/min 8	Control rod travel mm
1230	87, 0-89, 0 (85, 0-91.0)	1270-1280*	800	84, 0-88, 0 (82, 0-90, 0)	100	110 - 130	•	-

Checking values in brackets

\* 1 mm less control rod travel than cot. 2

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 19,1 k

5. Edition

PE 12 P 110 A 320 LS 832 Komb.-Nr. 0 401 840 060

ROV 350-1150 PA 476 R

supersedes 12.83

company: Daimler-Benz

OM 404 A

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12 0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

All test specifications are valid for Basch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Rotational speed	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Oifference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	12,8+0,1	13,4-13,6	0,4(0,8)			
350	7,4-7,6	1,4-2,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed		Sliding	iseve travel
Degree of deflection of control lever	rav/min Control rod travel mm 2	Control rod travel mm rev/min 3		Degree of deflection of control lever	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min	Control rod travel mm 3	rev/min	
max. ca.66	1150 11,8 4,0 1450	1295-13	95 25	-	-	-	ca.18	350	min.8,6 7,0-7,2 75 = 2,0	580	0,9-1,1 3,5-3,8 5,2-5,5 7,8
							 <b>③</b>				

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-toad of Control-ro Test oil ter		limitation intermediate speed	high idle s	rery characteristics (5e)	Starting Idle switching	٠. ٥	Torque-	control (5)
rev/min 1	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	
LÙA	0,7 bar 134,0-136,0 (131,5-138,5)	1185-1195*	LDA 500 LDA 700	0 bar 121,0-123,0 (118,5-125,5) 0,7 bar 135,0-139,0 (132,0-142,0)		130,0-150,0 (126,0-154,0)		13,0+0,

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.84

BOSCH

MB 19,1 k

Test at n =

500

rev/min decreasing pressure - ih bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 12 PLS 832	0,70		13,1 - 13,2
+ RQVPA 476 R		0	12,4 - 12,5
		0,39	12,9 - 13,0
		0,31	12,5 - 12,7
	<u> </u>		

Notes

(1) when n

rev/min and gauge pressure "

bar ( = maximum full-load control rod travel)

119

### 0

T

## Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MB 16.0 g 1 1. Edition

EØ

PE 10P100A320 LS 821-1 RQV 350-1250 PA 378-2 Komb.-Nr. 0 401 849 167

companyDaimler-Benz in 403 engine: 235 kW

1 - 8 - 7 - 6 - 3 - 5 - 1 - 10 - 9 - 4

0 - 27 - 72 - 99 - 144 - 171 - 216 - 243 - 288 - 315° ± 0.5° (±0.75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	10,1+0,1	9,7-9,9	0,3(0,6)			
350	7,4-7,6	1,5-2,1	0,2(0,5)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated	speed			Intermediate	rated sp	ed		Lower rated	speed			Stiding	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm 2	ww	(\$)	Degree of deflection of control lever	rev/min 5	Control r travet mm 8	od	Degree of deflection of control lever	rev/min 8	Control ro travel mm 9	d 3		0
max. ca.66	1250 9,1 4,0 1500	15,2-17,8 1290-1300 1360-1390 0-1,0	7	•	-	-			350	nin.9,	8	300 620 930 1250	1,9-1,1 1,6-3,9 1,3-5,6 8,3

Torque control travel a =

mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roo Test oil ten		Rotational-speed (2b) timitation intermediate speed	Fuel deliv		Starting Idle switching	. •	Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	8	7	8	9
1230	97,0-99,0 (95,0-101,0	1290-1300*	1230	75,0-77,0 (73,0-79,0) **	100	1300-150,0 (126,0-154,0)	•	-

Checking values in brackets

\*\* Adjusted at the inner lever of the reduced-delivery stop

\* 1 mm less control rod travel than col 2 9.84

BOSCH

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 19,1 m1 4. Edition

£n

PE 12 P 110 A 320 LS 832

RQV350-1150 PA 493 R

superseds 83 companDaimler-Benz OM 404 A engine 386 kW (525 PS)

Komb.-Nr. 0 401 840 067

1 - 5-9- 8 - 3 - 4 - 11- 10- 2 - 6 - 7 - 12

0 -15-60-75-120-135-180-195-240-255-300-315  $^{\circ}$   $^{\pm}$  0 ,5  $^{\circ}$  ( $^{\pm}$  0 ,75  $^{\circ}$  ) All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1130 350	13,1+0,1 7,5-7,7		0,4 (0,8)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated	upeed	1		Intermediate	rated sp	eed		Lower rated	speed	<del></del>	00:4:-	
	rev/min Control rod travel	Control rod travel mm rev/min		Degree of deflection of control lever	rev/min	Control (	rod	Degree of deflection of control		Control rod travel		ileeve travel
1	2	3		4		6	•	lever 7	rev/min	mm (3)	rev/min	mm ::
max.	1180	15,2-17,	8	•	-	-		ca.18	100	min.8,6	300	1,0-1,2
ca.66			5					·	350 690-	7,0~7,2 750= 2,0	600 850 1150	3,6-3,9 5,2-5,4 8,2
								<b>3a</b>				

Torque control travel a =

mr

## C. Settings for Fuel Injection Pump with Fitted Governor

Fufi-load de Control-roe Test oil ten		intermediate speed	nign iche s	very characteristics (5e)	idie	fuel delivery 6	Torque- travel	control (5
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 4a) 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel
LDA 1130	0,7 bar 140,0-142,0 (137,0-145,0)		LDA 500 LDA 1130 **	0 bar 121,0-123,0 (118,0-126,0 0,7 bar 99,0-103,0 (96,0-106,0)	100	130,0-150,0 (126,0-154,0		•

Checking values in brackets

\* 1 mm less control rod travel than col. 2

(1) when n

Setting	Measurement	diminution Control rod travel- difference	
Gauge pressure bar	Gauge pressure a bar	mm (1)	
0,70	0 0,40 0,33	13,1-13,2 12,3-12,4 12,9-13,0 12,5-12,7	
	Gauge pressure bar	Gauge pressure bar Gauge pressure bar 0,70	Gauge pressure bar Gauge pressure bar bar mm (1)  0,70  0 13,1-13,2 12,3-12,4 12,9-13,0

har ( maximum full-load control rod travel)

rev/min and

gauge pressure

<sup>\*\*</sup> Adjusted at the inner lever of the reduced-delivery stop

## **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 DEE 7,6 q 1. Edition

En

US-PES 6 P 110 A 720 RS 3083

US-RSV 400-1050 P2/488-1

supersedes -

John Deere

Komb.-Nr. 9 400 231 175

6466 A engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

3,45-3,55 Port closing at prestroke (3,40-3,60)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm*/100 strokes 3	Difference cm <sup>-1</sup> 100 strokes 4	Control rod travel mm	Fuel delivery cm/100 strokes 3	Spring pre-tensioning (forque-control valve) mm 6
1050	11,5(),1	14,8-15,0	0,4(0,75)			
400	5,9-6,1	1,4-2,0	0,4(0,75)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm 2	rev/min  Control rod  travel  mm rev/min  3	Intermed	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	3 To	rque control Control rod travel mm
lose	800 X=	0,3-1,0	-	-	-	ca.22	400 100	5.5 min.19,0	1050 700	11,5-11,6 12,3-12,6
ca.44	10,5 4,0 1300	1095-1105 1170-1200 0,3-1,7					400 625-68	5,9-6,1 5=2,0	500	9,8- 9,9

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

	II load stop emp 40°C (104°F)	Rotational speed limitat	Fuel delivery characteristics		Starting fuel delivery 5		4a) Idle stop	
i	cm <sup>1</sup> /1000 strokes	changed to ) rev/min 3	rev/min	cm //1000 strokes 5	rev/min	cm <sup>1/1000</sup> strokes 7	rëv/min 8	Control rod travel mm
LDA 1050 **	1,2 bar 147,5-149,5 (144,5-152,5)	1095-1105*	LDA 700 LDA 500	1,2 bar 160,0-166,0 (158,0-168,0) 0 bar 99,0-103,0 ( 96,0-106,0)	100	160,0-190	0 400	6,0

Checking values in brackets

\* 1 mm less control rod travel than col 2

Fest at n = 500	DEE 7,6 g		
Pump/governor	Setting	Measurement	diminution Control rod travel difference
	Gauge pressure " bar	Gauge pressure = bar	mm (1)
US-PES6P RS3083	0,50		11,9-12,0
+US-RSVP2/486-1		0,26	10,3-10,7

Notes (1) when n

rev/min and gauge pressure bar ( maximum full-load control rod travel)

-2-

\*\* Setting without a compensating spring retainer at 1 mm contro-rod travel less. Boosting of the full load fuel delivery with the compensating spring retainer to 11.5 mm control-rod travel.

2

# Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 9,6 n 1. Edition

PES 6 P 110 A 720 RS 3104 Komb.-Nr. 0 402 046 759

RQ 900 PA 738

supersedes

company: KHD

BF 6 L 413 FR/C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

RW = 9,0-12,0 mm

	<del></del>	2,73-2,33)	<del></del>	<del></del>	·	
Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
850	12,6+0,1	14,7-14,9	0,4(0,75)			0
300	6,7-6,9	1,3-1,9	0,45(0,75	)		
				,		
			· ·			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

PRG che		1	Full-load : Setting po			cifications (4)	Idle spec			cifications (5)	Torque (	control	<u></u>
	Control rod travel mm 2		rev/min 3	Control rad travel rnm 4	Central red travel mm 5	rev/min	1	Control red travel		Control rod travel mm	rev/min 11	Control rod travel mm 12	(3)
-	•		-	-	11,6 5,5 1050	900-905 936-945 0-1,0	-	•	-	•	•	-	
	ontrol travel									min-1			

on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

governor	felivery on control lever mp. 40°C (104°F)	Control rod stop	Fuel deliv	rery characteristics	Starting I	
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	Central red travel cm <sup>3</sup> /1000 strokes / mm
850	147,0-149,0 (144,0-152,0)	-	-	-	-	-

Checking values in brackets

9.84

WPP 001/4 SCA 11,0 y 2. Edition

<u>En</u>

PE 6 P 110 A 720 RS 3115

RQV 200-1100 PA 468

companisaab Scania

Komb.-Nr. 0 401 846 764

Please note instructions on sheet 2.

engine: DN 11 01

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	stroke	3,3-3,4 (3.25-3.45)	mm (from BDC)			•
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 stroke:	Spring pre-tensioning (torque-control valve) mm
600	12,4+0,1	11,9-12,1	0,5(0,8)			3,3 <sup>±</sup> 0,1
225	5,4-5,6	2,0-2,4	0,2(0,4)			(3,0-3,5)
;						

Adjust the fuel delivery from each outlet eccording to the values in

#### **B. Governor Settings**

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed		Clidion	lagua taguat
Degree of deflection of control	rev/min Control rod travel	mm -		Degree of deflection of control	1	Control rod travel	Degree of deflection of control		Control rod travel	Silding 8	leeve travel
lever	mm 2	rev/min (2	29)	lever	rev/min	mm (4)	lever	rev/min		rev/min	mm
<del></del>	<del> </del>			<u> </u>	-	0	<del> </del>	-	9	10	11
max.	1120	15,2-17	.8	-	-	-	ca. 11		min.6,9	150	0 -0,3
ca. 61	11 ,4 4,0	1140-115 1250-128						225 3 <b>3</b> 0-3	- • - •	470 780 1100	3,6-4,2 5,6-5,8 8,3
	1400	0 - 1,	0,				<b>3</b> a				

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		limitation high idla aneed (a)		• . •	Torque- travel	control S		
rev/min 1	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
600	119,0-121,0 (117,0-123,0			119,5-124,5 (11 <b>7</b> ,0-127,0)	100	230,0-280,0 = 20,0-21,0 mm RW		-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

8.84

BOSCH

leschäftsbereich KM. Kundendienst, Kfz-Ausrüstung : by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50: Printed in the Federal Republic of Germany nprimé en République Fédérsiu d'Allemagne par Robert Bosch GmbH.

## SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 22, 1983
- Start of fuel delivery-engine: 21° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

# **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 SCA 11,0 y 1 2. Edition

En

PE 6 P 110 A 720 RS 3115

RSV 350-1100 P 1/481

supersedes 6.83

Saab-Scania

DN 1101

Komb.-Nr. 0 401 876 728

Please note instructions on sheet 2.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

**Testoil-ISO** 

(3,25-3,45)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm1/100 strokes 3	cm <sup>1</sup> / 100 strokes 4	mm 2	cm 1100 strokes	mm 6
600	12,4+0,1	11,9-12,1	0,5(0,8)			3,3 <sup>±</sup> 0,1
350	5,4-5,6	2,0-2,4	0,2(0,4)			(3,0-3,5)
				]		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

		Interme	ediate rate	d speed	4	Lower	rated speed	(3) 10	rque control
Control rod travel	Control rod travel				Control-		Control rod travel		Control rod travel
mm	mm rev/min				deflection in degrees	rev/min	mm	rev/min	mm
2	3	4	5	6	7	8	9	10	11
800	0,3-1,0	-	_	-	ca. 30	350	5.0	-	-
X =	5,75					350	5 4 5 6		
11,4	1140-1150	1				480-54	0 = 2.0		
4,0	1210-1240						-,-		
1350	0,3-1,7								
	Control rod travel mm 2 800 X = 11,4	mm mm rev/min 2 3  800 0,3-1,0  X = 5.75  11,4 1140-1150 4,0 1210-1240	Control rod travel mm rev/min  2	Control rod travel mm rev/min 2 3 4 5  800 0,3-1,0   X = 5,75  11,4 1140-1150 4,0 1210-1240	Control rod travel mm rev/min 2 3 4 5 6  800 0,3-1,0	Control rod travel mm rev/min 2 3 4 5 6 Control-lever deflection in degrees 7 Ca. 30  X = 5.75  11,4 1140-1150 4,0 1210-1240	Control rod travel mm rev/min 2 3 4 5 6 Control-lever deflection in degrees 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Control rod travel mm rev/min 2 3 4 5 6 Control lever dellection in degrees 7 rev/min 8 9  800 0,3-1,0 Ca. 30 350 5,0  X = 5,75 350 40-1210-1240	Control rod travel mm rev/min 2 3 4 5 6 Control rev/min mm rev/min 2 3 4 5 6 Control rev/min mm rev/min 8 9 10  800 0,3-1,0  X = 5.75  11,4 1140-1150 4,0 1210-1240

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat		Jel delivery naracteristics	Starting tidle	fuel delivery 5	4a Idle stop	
rev/min	emp 40°C (104°F) cm/1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min 6	cm <sup>1</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
600	119,0-121,0 (117,0-123,0)	1140-1150*	1100	119,5-124,5 (117,0-127,0)	100	230,0-280, = 20,0-21, mm RW		-

Checking values in brackets

\* 1 mm less control rod travel than col 2

Geschäftsbereich KH. Kundendienst. Ktz-Ausrustung. 

1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

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#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 22, 1983

- Start of fuel delivery-engine: 21° before TDC

- Firing sequence, engine : 1-5-3-6-2-4

Testoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 MB 14,6 d

5. Edition

PE 8 P 110 A 320 LS 3802

RO 300/1150 PA 187-4

supersede 9.83

Komb.-Nr. 0 401 848 714

company: Daimler-Benz

OM 422

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

184 kW (250 PS)

See Service Information VDT-I-401/102

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Yesters

# A. Fuel Injection Pump Settings

Port closing at prestroke

4.00-4.10

mm (from BDCZyl. 8

Rotational speed fav/min	Control rod travel mm 2	Fuel delivery  # cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  * cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 8
•	11,6+0,1		0,4(0,8)	11,6+0,1	11,3-11,5	
300	8,3-8,5	1,1-1,7	0,4(0,7)	8,3-8,5	1,1-1,7	
*	with ret	urn throttle (1		*	without return	throttle (2)

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin PRG che	( ' '	Full-load : Setting po		-	cifications (4)	Idle spec	_		cifications (5)	Torque d	control (3)
rev/min 1	Control rod travel mm 2	rev/min 3	Control red travel rnm 4	Centrel red travel mm 5	rev/min 6	rev/min 7	Control red travel	rev/min 9	Control rod	rev/min	travel
650	13,2-14,0	650	13,6		1190-1205 1235-1265 0-1,0	300	7,7	300	min.9,3 7,6-7,8 450=2,0	-	-

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At 1190-1205 min

1 mm less control

## C. Settings for Fuel Injection Pump with Fitted Governor

	lelivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv		Starting f	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes	rev/min 6	Confre red travel cm <sup>3</sup> /1000 strokes:/ mm
1150 (1)	109,0-111,0 (106,0-114,0)	600	600	94,0-98,0 (91,0-101,0)	100	130,0-150,0
				·		

Checking values in brackets

8.84

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Checkin PRG che		Full-load Setting p		-	cifications (4)	idle spe Setting i			ecifications (5)	Torque d	
rev/min	Control rod travel mm 2	rev/min 3	Control rod travel rrum	Control red travel rnm 5	rev/min 6	rev/min 7	Control red travel	rev/min 9	Control rod	rev/min	Control rod travel mm
650	13,2-14,0	650	14,0		1190-1205 1235-1265 0-1,0	300	7,7	300	min.9,3 7,6-7,8 450≈2,0	-	-
											હ

Turque control travel on flyweight assembly dimension a

Speed regulation A1190-1205 min-1

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp 40°C (104 F)	Control rod stop 3a	Fuel deliv	rery characteristics	Starting I	. •
rev/min 1	cm*/-1000 strokes	rev/min 3	rev/min	cm '/- 1000 strokes 5	rev/min	Control rad travel cm 1/1000 strokes / mm
1150 (2)	113,0-115,0 (110,5-117,5)	600	600	94,0-98,0 (91,0-101,0)	100	130,0-150,0 (126,0-154,0)
Chash	Shas in brackete	and the second of the second o				

Checking values in brackets

Testoil-ISO 4113

#### **B.** Governor Settings

Checkini PRG che		Full-load				Idle spec	-			Torque	control	_
	Control rod   Control rod rod   Control rod rod   Control rod rod rod rod rod rod rod rod rod rod	Setting po	Control rod travel	Control rod travel mim	rev/min	Setting p	Control rod travel	ten/wiu		rev/min		(3
<b>.</b>		3	4	5	6	7	8	9	10	11	12	
		! !										
			1									
											:	
		L	l									

forque control travel on flyweight assembly dimension a

Speed regulation At

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever pp 40°C (104°F)	Control rod stop (3	Fuel deliv	ery characteristics	Starting to	tuel delivery ed Contra
ev/min	cm '/-1000 strokes 2	rev/min 3	rev/min 4	cm '/- 1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes / mm

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 21,9 f

1. Edition

PE 12 P 120 A 320 LS 3825

0

ROV 350-1050 PA 693

supersedes

company: Dâimler-Benz OM 424 A

1-5-9-8-3-4-11-10-2-6-7-12 0-15-60-75-120-135-180-195-240-255-300-315° ± 0.5°Values only apply to test nozzle-and-holder (± 0.75°

 $(\pm 0.75^{\circ})$ 

assembly 1 688 901 019 and fuel-injection test

tubing 1 680 750 067
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at pres	stroke (	3.95-4.15)	mm (from BDC)			•
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm³/100 strokes	mm 6
1050	9,7-9,8	14,8-15,0	0,5(0,9)			
350	4,5-4,7	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated t	speed	•	Intermediate	rated sp	eed	Lower rated	speed		Cidio	laawa tua sat
deflection	rev/min Control rod travel mm	Control rod (a) travel mm rev/min (28)	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	mm
<u> </u>	2	3	[4	5	6	7	8	9	10	11
max.	1180	15,2-17,8	-	-	-	ca.12	100 350	min.6,2 4,5-4,7	300 550	1,0-1,2 3,4-3,6
ca. 58	8,7 4,0 1300	1085-1095 1165-1195 0-1,0							800 1050	4,8-5,0 7,1
						<b>3</b>				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed (2b) limitation intermediate speed	Fuel deli- high idle s	very characteristics 5a	Starting idle switching	. •	Torque- travel	control 5
rev/min 1	cm <sup>3</sup> /1000 strokes	rev/min 49	rev/min 4	cm <sup>3</sup> /1000 strakes 5	rev/min	cm <sup>3</sup> /1000 atrokes	rev/min	travel
LDA 1050	0,7 bar 148,0-150,0 (145,0-153,0		LDA 600 LDA 500	0,7 bar 146,0-152,0 (143,0-155,0) 0 bar 128,0-130,0 (125,0-133,0)		150,0-170,0 (146,0-174,0)	-	•

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator

MB 21,9 f

2 -

Test at n

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1) .
PE 12 PLS 3825 +RQVPA 693	0,70	0 0,36 0,32	9,7-9,8 9,3-9,5 9,5-9,6 9,4-9,6

Notes

(1) when n

rev/min and gauge pressure =

bar ( maximum full-load control rod travel)

K9

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 SCA 14,2 a 3

4. Edition

PE 8 P 120 A 920/4 LS 7002 RQV 250-1000 PA 547

1-2-7-3-4-5-6-8 je  $45^{\circ} + 0.5^{\circ} (+ 0.75^{\circ})$ 

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes5.83 company: Scania engine DS 14 06

Komb.-Nr. 0 402 648 801

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
ab FD 141: 5,0 - 5,1
Port closing at prestroke (4,95 - 5,15) mm bis FD 052; 4,4 - 4,5

Rotational speed rev/min	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	(4,35 - 4,55) Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700 225	13,2+0,1 4,9-5,	18,7 - 18,9 1,0 - 1,4	0,6(0,9) 0,3(0,6)			3,3 ± 0,1 (3,0 - 3,5)

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed		Intermediat	rated sp	eed	Lower rated	speed		Slidinä	leeve travel
Degree of deflection	rev/min Control	travel	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel	3Uy a	0
of control lever	rod travel	rev/min (2)	of control	rev/min	mm (4)	of control	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1000	15,2-17,	3 -	-	-	ca. 10	100	min.5,9	200	1,0-1,2
ca. 60	12,2	1040-105	o				225	4,4-4,0	470	3,3-3,8
	4,0	1150-118	)				310-3	70=2,0	730	5,1-5,3
Ì	1000	0 - 1,					i		1000	7,7
				L		30				

Yorque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil te		Rotational-speed 2b limitation intermediate speed	Fuel delh high idle s	very characteristics (5e speed (5)	Starting Idle switching		Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strakes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA	0,9 bar	1040-1050*	LDA	0,9 bar	100	240,0-290,0	-	-
700	187,0-189,0 (184,0-192,0)		1000	183,0-191,0 (181,0-193,0)		bei 20,0-21, mm RW	þ	
	,	i	LDA	0 bar		***************************************		
			500	137,0-141,0			<u> </u>	
				(135,0-143,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### D. Adjustment Test for Manifold Pressure Compensator

SCA 14,2 a 3 - 2

Testain =

reamin increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod YANA Adjustion
	Gauge pressure = har	Gauge pressure = bar	mm (1)
LS 7002 RQVPA 547	0,9 bar	0 bar 0,23 bar 0,35 bar	13,2 - 13,3 11,3 - 11,4 11,9 - 12,1 12,8 - 12,9

Notes

(1) when n :

rev/min and gauge pressure = bar ( = maximum full-load control rod travel)

#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDI-1-400/116
- For sealing, see VDI-1-400/117
- Test specifications approved by Scania on Aug. 19.8.1983
- Start of fuel delivery-engine:

18° before TDC

- Firing sequence, engine

1-5-4-2-6-3-7-8

:

<sup>\*\*</sup> Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 14,2 a 1

3. Edition

PE 8 P 120 A 920/4 LS 7002 8 RQV 250-1050 PA 547

1-2-7-3-4-5-6-8 je  $45^{\circ}-0.5^{\circ}(-0.75^{\circ})$  Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersede 5.33 company Saab-Scania DS 1407 Konib.-Nr. 0 402 648 802

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Rotational speed sv/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,0+0,1	18,3-18,5	0,6(0,9)		,	3,3+0,1
225	4,4-4,6	1,0-1,4	0,3(0,6)			(3,0-3,5)

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed	·	01141	
Degree of deflection of control	rev/min Control rod trave	travei	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel	2nam <b>a</b> s	leeve travel
lever 1	S WW		lever	rev/min 5	mm 4	lever 7	rev/min 8	mm 3	rev/min 10	mm 11
max.	1050	15,2-17,8	-	-	-	ca. 10		min.5,9	200	1,0-1,2
ca. 62	12,0 4,0 1350	1090-1100 1195-1225 0-1,0					225 310 <i>-</i> 3'	14,4-4,6 70=2,0	500 800 1050	3,9-4,4 5,6-5,8 7,7
						<b>3</b>				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel deli- high idle s	very characteristics (5e peed (56)	Starting Idle switching	٠. ٠	Torque- travel	control (5)
rev/min 1	cm³/1000 strokes .	rev/min 49	rev/min 4	cm <sup>3</sup> /1000 atrokes 5	revīmin 6	cm³/1000 strokes 7	rev/min 8	travel mm
LDA 700	0,9 bar 18 <b>3</b> ,0-18 <b>5</b> ,0 (18 <b>0</b> ,0-1 <b>88</b> ,0)	1090-1100*	LDA 1000 LDA 500	0,9 bar 176,0-184,0 (174,0-186,0) 0 bar 137,0-141,0 (135,0-143,0)		240,0-290,0 =20,0-21,0 mm RW	•	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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#### D. Adjustment Test for Manifold Pressure Compensator

SCA 14,2 a 1 -2-

Pest at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 8 P LS 7002 +RQV PA 547	0,90	0 0,35 0,23	13,0-13,1 11,3-11,4 12,8-12,9 11,9-12,1

Notes

(1) when n ~

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDI-1-400/117
- Test specifications approved by Scania on Aug. 19.8.1983
- Start of fuel delivery-engine:

18° before TDC

- Firing sequence, engine

1-5-4-2-6-3-7-8

\*\* Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 SCA 14,2 e

2. Edition

PE 8 P 120 A 920/4 LS 70/02-1 R

RSV 350-1050 P 1/504

supersede 5 ab - Scania company DS 14 42

1-2-7-3-4-5-6-8 je  $45^{\circ}$   $\stackrel{?}{=}0,5^{\circ}$  ( $\stackrel{+}{=}0,75^{\circ}$ ) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test

Komb.-Nr. 0 402 678 801

tubing 1 680 750 015
All test specifications are valid for Boych Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Fump Settings

Please note instructions on sheet 2.

Port closing at prestroke

5,0-5,1 4,95-5,15

mm (from BDC)RW=9,0-12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque-control valve)
rev/min 1	mm (2)	cm <sup>1</sup> /100 strokes 3	cm³/ 100 strokes 4	mm 2	cm <sup>1</sup> /100 strokes	mm 6
700	13,2+0,1	18,7-18,9	0,6(0,9)			
350	4,4-4,6	1,4-1,8	0,3(0,6)			
		·				
<del></del>						

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1) Uppe	er rated speed		Interm	ediate rati	ed speed	(4)	Lowe	er rated speed	(3) 10	orque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever dellection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
lose	800	0,3-1,0	-	-	•	ca.30	350	4,0		-
	X =	6,0	l				350 440-50	4,4-4,6		
ca. 64	12,2 4,0 1250	1090-1100 1160-1190 0,3-1,7								

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

i-load stop				Starting Idle	fuel delivery 5	4a Idle stop		
cm <sup>1</sup> /1000 strokes	changed to ) rev/min 3	rev/min 4	cm71000 strokes 5	rev/min	cm <sup>1</sup> /1000 strokes	rev/min B	Control rod travel mm	
187,0-189,0 184,0-192,0)	1090-1100*	1050	183,0-191,0 (181,0-193,0)	100	240,0-290, =20,0-21,0 mm RW	0 -	-	
	mp 40°C (104°F) cm*/1000 strokes 2	mp 40°C (104°F) speed fimilat Note changed to ) rev/min 3	speed limitat Note changed to ) rev/min 3 (187, 0–189, 0) (1090–1100* 1050	speed limitat Note characteristics Note changed to 1 rev/min 3 characteristics  187,0-189,0 1090-1100* 1050 183,0-191,0 (181,0-193,0)	speed limitat Note characteristics   Starting Idle   Starting   Starting Idle	speed limitat Note changed to rev/min 3 cm²/1000 strokes 2 cm²/1000 strokes 5 cm²/1000 strokes 5 cm²/1000 strokes 5 cm²/1000 strokes 5 cm²/1000 strokes 6 cm²/1000 strokes 7 cm²/1000 st	speed limitat Note characteristics   Note changed to   rev/min	

Checking values in brackets

\* 1 mm less control rod travel than col 2

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#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Okt. 5, 1983
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

WPP 001/4 SCA 14,2 b 1 4. Edition

PE 8 P 120 A 920/4 LS 7003 RO 750 PA 528 1 - 2 - 7 - 3 - 4 - 5 - 6 = 8 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes 5.83 company Saab-Scania DS 1441, DSI14 42 Komb.-Nr. 0 402 648 803

Please note instructions on sheet 2.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
ab FD 141: 5.0 - 5.1
Port closing at prestroke (4.95-5.15)

bis FD 052: 4,4 - 4,5 mm

	(4,	95-5,15)	mim (from BUC)		(4,35-4,5	55)
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm
700	12,8+0,1	18,7 -18,9	0,6 (0,9)			3,3 ± 0,1 (3,0 - 3,5)

Adjust the fuel delivery from each outlet seconding to the values in

#### **B. Governor Settings**

on flyweight assembly dimension a =

Checking PRG che		$\bigcirc$	Full-load Setting p			cifications (4)	Idle spe	-		cifications (5)	Torque	_
rev/min 1	Control rod travel mm 2		rev/min 3	Control rêd travel mm 4	Control red travel mm 5	rev/min 6	rev/min 7	Control red travel	rev/min 9	Control rod	rev/min	Control rod travel mm
-	-		-	•	11,8 4,0 850	750-755 784-79 <b>7</b> 0-1,0	-	-	-	-	<b>e.</b>	-
	ontroi travel								750	755 minst		

# C. Settings for Fuel Injection Pump with Fitted Governor

delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics		fuel delivery 6
cm³/-1000 strokes 2	rev/min 3	rev/min	cm³/~1000 strokes	rev/min	Control red travel Cm <sup>3</sup> /1000 strokes:/ mm
700 187,0-189,0 (184,0-192,0)	-	-	-	100	240,0-290,0 = 20,0 - 21,0
		High	idle speed		mm RW
		Dispe	rsion: 4,0 (7,0)		
	control lever mp. 40°C (104°F) cm³/-1000 strokes 2 187,0-189,0	control lever (2) (3a)  cm³/-1000 strokes rev/min 3  187,0-189,0 -	control lever (2) (3a) rev/min (3a) rev/min (187,0-189,0) (184,0-192,0)	control lever mp. 40°C (104°F)  cm³/-1000 strokes 2  187,0-189,0 (184,0-192,0)  Free/min 3  rev/min 3  rev/min 4  Free/min 5  Trev/min 6  Free/min 7  Free/min 6  Free/min 7  Free/min 7  Free/min 6  Free/min 7  Free/min 7  Free/min 6  Free/min 7  Free/min 7  Free/min 6  Free/min 7  Free/min 7  Free/min 6  Free/min 7  Free/min 7  Free/min 7  Free/min 6  Free/min 7  Free/min 7  Free/min 6  Free/min 7  Free/min 7  Free/min 7  Free/min 6  Free/min 7	Control lever   Characteristics   Cont

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1 mm less control

rod travel

## SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 19, 1983
- Start of fuel delivery-engine: DS 14-18° before TDC; DSI 14-17° before TDC
- Firing sequence, engine : 1-5-4-2-6-3-7-8
- \*\* Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 3,1 mm.

and Governors

WPP 001/4 SCA 14.2 b 3. Edition

PE 8 P 120 A 920/4 LS 7003

RO 900 PA 528

supersede 5 . 83 company Saab-Scania

je 45 ° ±0,5° (±0,75°) 1-2-7-3-4-5-6-8 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test

DS 14 41, DSI14 42 DSI14 43

tubing 1 680 750 015

Port closing at prestroke

Komb.-Nr. 0 402 648 804

All test specifications are valid for Bosch-Fuel Injection Pump Test Benches and Testers

Please note instructions on sheet 2.

Fuel Injection Pump Settings

(4.95-5.15)mm (from BDC)

4,4-4,5 (4 35-4 55)

		,50 0,107			(4,554,5	<i>)</i>
Rotational speed rev/min 1	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>2</sup> /100 strokes 3	Spring pre-ter-sioning (torque-control valve) mm 6
850	12,8+0,	18,6-18,8	0,6 (0,9	•		3,3 ±0,1 (3,0-3,5)

bis FD 052:

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Checkin PRG che	g of slider ck	$\bigcirc$	Full-load : Setting po			cifications 4	Idle spe	_		cifications (5)	Torque	_	(2)
rev/min 1	Control rod travel mm 2	_	rev/min 3	Control red travel mm 4	Control red travel rncs	rev/min 6	rev/min	Control rod travel	rev/min 9	Control rod	rev/min	Control rod travel	<b>3</b>
-	-		•	-		900-905 941-955 0-1,0	-	-	-	-	•	-	
	ontrol travel							- 9	00-90	5 min 1		1 mm less co	

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics (3b)			
rev/min	cm³/-1000 strokes 2	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	Control red travel cm <sup>3</sup> /1000 strokes/ mm	
850	186,0-188,0 (183,0-191,0)	-	- High Dispe	dle speed rsion: 4,0 (7,0)	100	240,0-290,0 = 20,0-21,0 mm RW	

Checking values in brackets

9.84

#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 19, 1983
- Start of fuel delivery-engine: DS 14-18° before TDC; DSI 14-17° before TDC
- Firing sequence, engine : 1-5-4-2-6-3-7-8
- \*\* Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 3,1 mm.

WPP 001/4 SCA 14,2 b 2 3. Edition

PESP 120A 920/4 LS 7003 RO 1050 PA 528 1-2-7-3-4-5-6-8 je 45° ±0,5° (±0,75°) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tuhing 1 680 750 015

supersedes 5 · 83 Saab-Scania company DS 14 41, DSI 14 43 Komb.-Nr. 0 402 648 805

Please note instructions on sheet 2.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Ab Fyeldnjection Rump Settinggis FD 052: -Port closing at prestroke (4,95-5,15)

4,4-4,5 mm (4,35-4,55)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel de/livery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve)
1000	12,8+0,	1 19,9-20,1	0,6(0,9)			3,3 <sup>±</sup> 0,1 (3,0-3,5) **

mm (from BDC)

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

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Checkin PRG che	g of slider ck (1	<b>`</b> I	Full-load speed regulation Setting point   Test specifications   4				Idle speed regulation Setting point   Test specifications (5)				Torque control		
	Control red	rev/min	Control rad travel rnm 4	Control red travel mm 5	rev/min	<u>,</u>	rev/min	Control red travel mm	rev/min 9	Control rod	rev/min	Control rod (3) travel mm	
•	-			4,0 1150	1050-10 1098-11 0-1,0			•		_		-	
· · · · · ·	ontrol travel		1						050.4				

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At 1050-1055 mm<sup>-1</sup>

1 mm less control

# C. Settings for Fuel Injection Pump with Fitted Governor

	lelivery on control lever np 40°C (104°F)	2	Control rod stop	3	Fuel deliv	ery characteristics		Starting f	
rev/min	cm <sup>3</sup> /-1000 strokes		rev/min 3		rev/min 4	cm <sup>3</sup> /-1000 strokes 5		rev/min 6	Control red travel cm <sup>3</sup> /1000 strokes:/ mm
1000	194,0-201,0 (196,0-204,0)		-			•		100	240,0-290,0 = 20,0-31,0 mm RW
					High	idle speed			
					Dispe	rsion: 4,0 (7,0	)		

Checking values in brackets

9.84

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#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 19, 1983
- Start of fuel delivery-engine: DS 14-18° before TDC; DSI 14-17° before TDC
- Firing sequence, engine : 1-5-4-2-6-3-7-8
- \*\* Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 3,1 mm.

Testoil-ISO 4113

2

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 SCA 11,0 v

4. Edition

En

PE 6 P 120 A 720 RS 7004 RQ 750 PA 528 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015 supersedes 5.83 company SAAB-SCANIA engine DS 1143, 44, 45 DSI11 42, 45

Komb.-Nr. 0 402 646 803

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2h FD 141: 5,00-5,10

Port closing at prestroke (4,95-5,15) mm (from BDC)

bis FD 052: 4,40-4,50 (4.35-4.55)

,		1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1		y	ang an an an North of State and a second	7.5% \$ 1 min - 1 min - 1 min - 1
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm1/100 strokes	100 strokes	mm	cm 1/100 strokes	mm
1	2	3	4	2	3	6
700	12,840,	20,9 - 21,1	0,6(0,9)			3,3 ± 0,1 **
: !						(3,0-3,5)

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkini	g of slider	Full-load	speed re	gulation		idle spe	ed regula	ation		Torque o	control
		Setting p	etting point   Test spe		pecifications S		Setting point		Test specifications		
ev/min	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel rmm 8	rev/min 9	Control rod travet mm 10	rev/min	Control rod travel mm 12
-	-	-	-	11,8 4,0 850	750-75! 784 -79 0 - 1	7	-	-	-	-	-
		•									,

Torque-control travel on flyweight assembly dimension a

mm

Speed regulation A750-755 min-1

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

40°C (104 F)				Starting fuel delivery		
m¹/- 1000 strokes	rev/min 3	rev/min	cm <sup>1</sup> /- 1000 strokes 5	rev/min 6	cm <sup>1</sup> /100 strokes	
209,0 - 211,0 (206,0 - 214,0)	-			100	240 - 290 = 20,0-21,0 mm RW	
	09,0 - 211,0	09,0 - 211,0 -	3 4 09,0 - 211,0 High	3 4 5 09,0 - 211,0 - High idle speed Dispersion:	3 4 5 6  09,0 - 211,0 - 100  206,0 - 214,0) High idle speed  Dispersion:	

Checking values in brackets

9.84

## SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-1-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 18. 1983
- Start of fuel delivery-engine: DS 11-17° before TDC; DSI 11-16° before TDC
- Firing sequence, engine : 1-5-3-6-2-4
- \*\* Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 3,1 mm.

# Test Specifications Fuel Injection Pumps (2) and Governors

WPP 001/4 SCA 11.0 v 4

1. Edition

PE 6 P 120 A 720 RS 7004

RO 750 PA 528-1

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tuhing 1 680 750 015

supersedes SAAB-SCANIA engine DN 11

Komb.-Nr. 0 402 646 815

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke // OF-F 151 MM (from RDC)

		(4,95-5,15 <i>)</i>	······· (iidiii buc)			
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (forque-control valve) mm 6
700	10,6+0,1	15,5-15,7	0,6(0,9)			3,3 <sup>±</sup> 0,1 ** 3,0-3,5)
** Due to new de	smoothin livery-va	g of the sealing live holder must	g edge, t be adjus	he spring ted to 2,	tension with a 9-3,1 mm.	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

	Checking of slider PRG check Setting point			-	cifications (4)	Idle speed regulation Setting point   Test specifications (5)				Torque control		
rev/min	Control rod travel mm 2	rev/min 3	Control red travel rnm 4	Centrol red travel rnm 5	rev/min	rev/min 7	Control red travel mm	rev/min	Control rod travel	rev/min	travel	
•	-	-	-	9,6 4,0 850	750-755 773-792 0-1,0	-	ł	-	-	•	-	

Torque-control travel on flyweight assembly dimension a = 750-755 min-1

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever op 40°C (104°F)	Control rod stop	3a) Fuel di	livery characteristics	Starting to	luel delivery
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/mi	cm <sup>3</sup> /-1000 strokes 5	rev/min	red travel cm <sup>3</sup> /1000 strokes / mm
700	155,0-157,0 (152,0-160,0)	-		idle speed persion: 4,0 (7,0)	100	240-290 = 20,0-21,0 mm RW
			Dis			

Checking values in brackets

9.84

Testoil-ISC

# **Test Specifications** Fuel Injection Pumps (2) and Governors

WPP 001/4 SCA 11,0 v 2

3. Edition

PE 6 P 120 A 720 RS 7004

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tuhing 1 680 750 015

supersed 5.85 Šaab-Scania

DS 11 43, 44, 45 DSI11 42, 45

Please note instructions on sheet 2.

Komb.-Nr. 0 402 646 804

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel injection Pump Settings

bis FD 052:

4,4-4,5 mm (4.35-4.55)

Port closing at pres	troke	(4,95-5,15)	mm (from BDC)		(4,35-4,5	5)
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>1</sup> /100 strokes 3	Difference cm <sup>1</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) inm 6
850	12,8+0,	20,7 - 20,9	0,6(0,9)			3,3 ±0,1 (3,0-3,5) **

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

PRG che	Control rod travel	Full-load Setting por rev/min 3	•	•	rev/min	Idle spec Setting p rev/min 7	Control red travel		cifications (5) Control rod travel mm	Torque of rev/min	Control rod 3
1	-	-	-		900-905 941-955 0-1,0	-	-	-	-	-	-
on flywei	ontrol travel ght assembly dime	nsion a =	<u> </u>	mm	Spe	ed regula	90 ition: At	0-905	min <sup>-1</sup>		1 mm less contro rod trave

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Startir Idle s	ng fuel delivery 6
rev/min 1	cm³/-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes	rev/m	red travel
850	207,0-209,0 (204,0-212,0)	-	-	-	10	0 240,0-290,0 = 20,0-21,0 mm RW
			High	idle speed		
			Dispe	rsion: 4,0 (7,0)		

Checking values in brackets

9.84

#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-1-400/116
- For sealing, see VDT-1-400/117
- Test specifications approved by Scania on Aug. 18. 1983
- Start of fuel delivery-engine: DS 11-17° before TDC; DSI 11-16° before TDC
- Firing sequence, engine : 1-5-3-6-2-4
- \*\* Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 3,1 mm.

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# **Test Specifications Fuel Injection Pumps** and Governors

WPP 0J1/4 SCA 11,0 v 1 3. Edition

RQ 1050 PA 528 PE 6 P 120 A 720 RS 7004 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 686 750 015

supersede 5.83 Saab-Scania
DS 1143, DSI11 45 Komb.-Nr. 0 402 646 805

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Please note instructions on sheet 2.

A. Fuel Injection Pump Settings bis FD 052: 4,4-4,5 mm Port closing at prestroke (4.95-5.15)mm (from BDC) (4,35-4,55)

		• • • • • • • • • • • • • • • • • • • •				
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>1</sup> / 100 strokes	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
1	2	3	4	5	3	6
1000	12,8+0,	21,4 - 21,6	[0,6(0,9)]		1	3,3 ± 0,1 (3,0-3,5)
						(3,0-3,5)
	•				-	
	<u></u>		1	1	<u> </u>	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Checkin	g of slider	Full-load:	speed re	gulation		idle spe	ed regula	ation		Torque o	control
		Setting po	Setting point   Test specificati			Setting p	oint	cifications	}		
rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min		rev/min		rev/min	
1	2	3	4	5	6	<u> ′</u>	8	9	10	11	12
•	-	-	-	11,8 4,0 1150	1098-1113		-	-	-	-	-
		i		ł		l				1	1
		1	ľ						ļ		
		ł								1	

Torque control travel on flyweight assembly dimension a

Speed regulation At 1050-1055 min-1

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics	Starting fuel delivery		
rev/min	cm 1/- 1000 strokes	rev/min 3	rev/min	cm*/-1000 strokes	rev/min	cm³/100 strokes	
1000	214,,0-216,0 (211,0-219,0)			idle speed ersion: 4,0 (7,0)	100	240 - 290 = 20,0 - 21,0 mm RW	

Checking values in brackets

9.84

## SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-1-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 18. 1983
- Start of fuel delivery-engine: DS 11-17° before TDC; DSI 11-16° before TDC
- Firing sequence, engine : 1-5-3-6-2-4
- \*\* Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 3,1 mm.

# **Test Specifications** Fuel Injection Pumps 1 PP 001/4 SCA 11,0 w and Governors

2. Edition

PE 6 P 120 A 720 RS 7007

ROV 200-1000 PA 539-2

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

7A. Fuel Injection Pump Settings

supersedes 5.83

Scania company:

**DSC 1101** engine: LKW 112

Komb.-Nr. 0 402 646 812

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Please note instructions on sheet 2.

	Port closing at pres		4,5 - 4,6 4,45-4,65)	mm (from BDC)	= RW 6.0	- 8.0 mm	
l	Rotational speed	Control rod travel	Fuel delivery			Fuel delivery	Spring (torqu

Rotational speed rev/min 1	Control rod travet mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,7+0,	21,0-21,2	0,7(1,0)			3,3 <sup>±</sup> 0,1
225	4,4-4,6	1,4-1,8	0,3(0,6)			(3,0-3,5) **

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	speed		Intermediat	e rated sp	eed	Lower rated	speed		Stiding	sleeve travel
deflection	rev/min Control rod travel mm	travel	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm 3		0
max.	1040	15,2-17,8	-	-	-	ca.10	100 225	min.5,9 4,4-4,6	150	0,5-0,8 3,1-3,6
ca. 62	13,7 4,0 1300	1040-1050 1165-1195 0-1,0						370 = 2,0	720 1000	5,1-5,4 7,9
		,				<b>3</b>				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel deli- high idle s	very characteristics (5a)	Starting Idle switching	• . •	Torque- travel	control 5
rev/min 1	cm <sup>3</sup> /1000 strokes	rev/min 49	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1 <b>000</b> strokes 7	rev/min	trave: mm
LDA 700	0,9 bar 210,0-212,0 (207,0-215,0)	1040-1050 *	LDA 1000 LDA 500	0,9bar 201,0-209,0 (199,0-211,0 0 bar 164,0-168,0 (162,0-170,0	100	240,0-290,0 = 20,0-21 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### D. Adjustment Test for Manifold Pressure Compensator

SCA 11,0 w - 2

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travet- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) ,
PE6PRS 7007 +RQVPA539-2	0,42	0,90 0 0,30	14,0 - 14,1 14,7 - 14,8 11,8 - 11,9 12,4 - 12,6

Notes:
(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-1-400/116
- For sealing, see VDI-1-400/117
- Test specifications approved by Scania on Aug. 18. 1983
- Start of fuel delivery-engine: 22° before TDC at control-rod travel= 6,0-8,0 mm
- Firing sequence, engine
- 1-5-3-6-2-4

\*\* Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 3,0 mm.

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 14,2 d

4. Edition

PE 8 P 120 A 920/4 LS 7008

ROV 200-950 PA 547-1

supersede 9.83 company: Scania engine DSC 1401

Komb.-Nr. 0 402 648 807

 $1 - 2 - 7 - 3 - 4 - 5 - 6 - 8 \text{ je} \cdot 45^{\circ} = 0,5^{\circ} (\pm 0,75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
700	14,2+0,1	20,1-20,3	0,7(1,0)			3,3 = 0,1
225	4,6-4,8	1,4-1,8	0,3(0,6)			(3,0 - 3,5)
Value assem tubin	þly 1 688	ply to test no. 901 019 and fo 50 015	zle-and-h el-inject	older ion test		**

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed		Intermediat	e rated sp	eed	Lower rated	speed		Clidian	danus tanual
Degree of deflection of control lever	rev/min Control rod travel	Control rod (18 travel mm rev/min (2)	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel		deeve travel
1	2	3	4	5	6	7	8	mm (3)	rev/min 10	11
max.	990	15,2-17,8	-	-	-	ca. 9	100	min.5,9	150	0,5-0,9
ca. 60	3,2 4,0 250	990-1000 1115-1145 0-1,0					Į	4,4-4,6 70 = 2,0	420 680 950	3,0-3,5 4,8-5,1 7,4
						<b>3a</b>				

Torque control travel a =

· mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel deli high idle :	very characteristics (5a speed (5b)	Starting idle switchli		Torque-control (5 travel	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 4a	rev/min 4	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 8	travel mm
LDA 700	0,9 bar 201,0-203,0 (198,0-206,0)	990-1000*	LDA 950	0,9 bar 194,0-202,0 (192,0-204,0)	100	250,0-300,0 = 20,0-21,0 mm RW	-	•
			LDA 500	0 bar 156,0-160,0 (154,0-162,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

8.84

**BOSCH** 

D. Adjustment Test for Manifold Pressure Compensator

SCA 14,2 d

- 2 -

Test at n =

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 8 PLS 7008	0,90		14,2 - 14,3
+ RQVPA 547-1		0	11,5 - 11,6
		0,35	13,6 - 13,7
		0,24	12,1 - 12,3

Notes

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-1-400/116
- For seal<u>i</u>ng, see VDT-I-400/117
- Test specifications approved by Scania on Aug. 18. 1983
- Start of fuel delivery-engine: 22° before TDC at control-rod travel= 6,0-8,0 mm
- Firing sequence, engine : 1-5-3-6-2-4
- \*\* Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 3,0 mm.

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# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 ROL 12,2 c

1. Edition

PE 6 P 120 A 720 RS 7012 ROV 250-1000 PA 714 Komb.-Nr. U 402 646 820 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes\_

company: Rolls Royce Eagle 3 253 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	itroke	(4,95-5,15) mm (from BDC) RW = 9.0-12.0 mm								
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6				
700	13,6+0,1	20,9-21,1	0,6(0,9)			3,3±0,1				
250	4,4-4,6	1,3-1,7	0,3(0,6)			(3,0-3,5)				
						:				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated: Degree of deflection of control lever	rev/min Control rod travel	Control rod ta travel mm rev/min (2a	of control	rated sp	Control rod travel	Lower rated Degree of deflection of control lever	speed rev/min	Control rod travel	Sliding s	mm
māx. ca.60	1000 12,6 4,0 1300	15,2-17,8 1040-1050 1160-1190 0-1,0	1	•	-	ca. 10		min.5,9	200 470	1,0-1,2 3,4-3,9 5,2-5,4 7,9

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil te		Rotational-speed 2b limitation intermediate speed	Fuel delic high idle s	rery characteristics (5e)	Idle	fuel delivery 6	Torque- travel	Control roc
rev/min 1	cm <sup>3</sup> /1000 strokes	rev/mɨn 40 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes	rev/min 8	travel mm
LDA 700	0,9 bar 209,0-211,0 (206,0-214,0)	1040-1050*	LDA 1000 LDA 500	0,9 bar 203,0-211,0 (201,0-213,0 0 bar 160,0-164,0 (158,0-166,0	250	240,0-290,0 =20,0-21,0 mm RW 13,0-17,0	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

# D. Adjustme Test for Manifold Pressure Compensator

ROL 12,2 c

-2-

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

300			
 Pump/governar	Setting	Measurement	diminution Control rod travet- difference
	Gauge pressure bar	Gauge pressure · bar	mm (1)
PE 6 PRS 7012 +RQVPA 714	0,90	0 0,42 0,29	13,6-13,7 11,6-11,7 12,8-12,9 11,9-12,1

Notes

(1) when n

rev/min and gauge pressure =

bar ( - maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 SCA 11,0 z 1

1. Edition

En

PE 6 P 120 A 720 RS 7013 RSV 350-1100 P 1/481 Komb.-Nr. 9 400 087 310 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes Saab-Scania Brasilien company engine D SE 11

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings 5,0-5,1

Port closing at prestroke

T

(4,95-5,15)

mm (from BDQ) RW = 9,0-12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rav/min 1	mm 2	cm / 100 strokes	cm <sup>1</sup> / 100 strokes 4	mm 2	cm <sup>1</sup> /100 strokes	mm 6
100	15,0+0,1	26,3-26,5	0,6(0,9)			
350	5,4-5,6	4,3-4,7	0,3(0,6			(3,0-3,5)
			iu	j		
	Ī					

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection				Intermediate rated speed			Lower	rated speed  Control rod  travel	3 10	rque control Control rod travel
of control lever	mm 2	mm rev/min 3	4	5	6	lever deflection in degrees 7	rev/min 8	mm 9	rev/min	mm 11
loose	800	0,3-1,0 6,0	-	-	•	ca.30	350	5,0	-	~
ca.64	14,0 4,0 1250	1040-1050 1130-1160 0,3-1,7					350 480-5	5,4-5,6 0=2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

9	all load stop	6 Rotational- speed limital	11436	uel delivery paracteristics	Starting t	fuel delivery 5	(4a) Idi	e stop
rev/min	emp 40°C (104°F) cm //1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min	cm 1/1000 strokes	rev/min 8	Control rod travel mm
1000	263,0-265,0 (260,0-268,0)	1040-1050*	700	265,0-273,0 (261,0-275,0)	100	300,0-350 =20,0- 21,0 mm RW	,0 350	5,5

Checking values in brackets

\* 1 mm less control rod travel than col 2

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

Testoil-ISO 4113

## **Test specifications** Fuel injection pumps and governors En.

WPP 001/4 MTU 31.7 q 1

1. Edition

PE 8 ZWM 160 / 100 RS 2001

Komb.-Nr. 0 406 008 023

8-4-5-6-3-1-2-7

 $0-45-90-135-180-225-270-315^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

Please note instructions on sheet 2.

Replaces

Firm:

Engine: 8 V 396-03

960 kW

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

2,5-2,6(2,45-2,65)

Port closing at prestroke

Reference of the property of th

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min 1	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
1000	18,0	622-636	20 (30)	619-639	
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-133	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated	speed		Medium ra	ted spe	ed	Lower rat	ed spec	d	Torqu	e control
Control lever deflection degrees 1	mm min ' 2	Control- rod travel mm min <sup>1</sup> 3	Control lever flection degrees 4	min ' 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min † 8	Control- rod travel mm 9	min '	Control- rod travel mm 11
-	-	-	•	-	-	-	-	-		-

Torque control travel a -

Speed regulation: At

1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-de charact		Starting fuel delivery		
min ' 1	cm 1/1000 strokes 2	min ' 3	min ' 4	cm <sup>3</sup> /1000 strokes 5	min '	cm³/1000 strokes 7	
Adjus the e	according to gine records-		,	-	-	-	
	_					. •	

Checking values in brackets

9.84

#### Note:

The fuel-injection pump has a special control rod for the partial cutoff of certain cylinders.

Control-rod travel "0" corresponds to 1.0 mm distance of the control-rod pot from the face-side stop plate.

Testoil-ISO 4113

## Test specifications **Fuel injection pumps** and governors En.

WPP 001/4 MTU 47,5 g

1. Edition

PE 12 ZWM 160/100 RS 2003

Replaces

·Komb.-Nr. 0 406 000 008

MTU Firm:

12- 9- 4- 5- 8 - 11- 2 - 3 - 10- 7 - 6 - 1 0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (±0,75°)

12 V 396-03 Engine:

1440 kW

Please note instruc-

tions on sheet 2. All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings 2,5-2,6 Port closing at prestroke (2,45-2,65) mm mm (from BDC)7v1 . 49

		(2,45-2,05)		16	
Rotational speed min	rod travel	Fuel delivery Average value cm <sup>3</sup> /1000 strokes	Difference in fuel delivery cm <sup>3</sup> /1000 strokes	Fuel delivery Checking values cm³/1000 strokes	Spring pre-tension (torque-control valve)
1	2		14	5	
1000	18,0	622-636	20 (30)	619-639	•
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-133	
				}	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rate	d speed		Medium r	ated spe	ed	Lower rat	ed spee	d	Torq	ue control
Control lever deflection degrees 1	mm min ' 2	Control- rod travel mm min <sup>1</sup> 3	Control lever flection degrees 4	min <sup>1</sup> 5	Control- rod travel mm 6	Control lever de- flection degrees 7	1	Control- rod travel mm 9	min 10	Control- rod travel mm 11
•	-	-	•	-	-	-	-	-		•

Torque control travel a -\_

Speed regulation: At

1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control rod stop at speed	Fuel-de charact		Starting fuel delivery		
min ¹	cm³/1000 strokes 2	min ' .3	min - 1 4	cm <sup>3</sup> /1000 strokes 5	min · ¹ 6	cm <sup>3</sup> /1000 strokes 7	
	according to gine records-		•	. <b>-</b>	-	<b>-</b>	

Checking values in brackets

#### Note:

The fuel-injection pump has a special control rod for the partial cutoff of certain cylinders.

Control-rod travel "0" corresponds to 1.0 mm distance of the control-rod pot from the face-side stop plate.

Testoil-iSO 4113

# **Test specifications Fuel injection pumps** and governors

WPP 001/4 MTU 23,7 a 1

1. Edition

PE 6 ZWM 160/100 RS 2004

Replaces .

Komb.-Nr. 0 406 006 034

Firm:

6-1-2-3-4-5 0-75-120-195-240-315° ± 0,5° (± 0,75°)

6 V 396-03 Engine:

720 kW

Please note instruc-

tions on sheet 2. All lest specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke mm (from BDC) 1

rod travel	Average value	in fuel delivery	Checking values	(torque-control valve)
mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
2	3	4	5	
18,0	622-63 6	20 (30)	61 9-639	
9,0	220-248	28 (42)	215-253	
9,0	104-128	16 (24)	99-133	
	18,0 9,0	mm cm <sup>3</sup> /1000 strokes 3 18,0 622-63 6 9,0 220-24 8	mm cm <sup>3</sup> /1000 strokes 2 cm <sup>3</sup> /1000 strokes 4 18,0 622-63 6 20 (30) 9,0 220-24 8 28 (42)	mm cm <sup>3</sup> /1000 strokes cm <sup>3</sup> /1000 strokes cm <sup>3</sup> /1000 strokes 5  18,0 622-63 6 20 (30) 61 9-63 9  9,0 220-24 8 28 (42) 21 5-25 3

Adjust the fuel delivery from each outlet according to the values in:

#### **B.** Governor settings

Upper rated	speed		Medium r	ated spe	ed	Lower ra	led spee	d	Torq	e control
Control lever deflection degrees 1	mm min ' 2	Control- rod travel mm min 1 3	Control lever flection degrees	min ¹ 5	Control- rod travel mm 6	Control lever de- lection degrees 7	min <sup>1</sup> 8	Control- rod travel mm 9	min 10	Control- rod travei mm
-	-	•	-	-	<b>≠</b> ÷		-	-	-	-
			j				·			

Torque control travel a -

mm

Speed regulation: At

1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gov	ad delivery ernor control lever il temperature 40°)	Control rod stop at speed	Fuei de charect		Starting fuel delivery		
min '	cm³/1000 strokes 2	min ' 3	min 1	cm³/1000 strokes 5	min 1	cm <sup>3</sup> /1000 strokes 7	
	st according to engine records-		-	-	-	-	

Checking values in brackets

L16

#### Note:

The fuel-injection pump has a special control rod for the partial cutoff of certain cylinders.

Control-rod travel "0" corresponds to 1.0 mm distance of the control-rod pot from the face-side stop plate.

WPP 001/4 MTU 47,5 f

1. Edition

PE 12 ZWM 160/100 RS 2005 Komb.-Nr. 0 406 000 009

Replaces

Firm: 12 V 396-03

Engine: 1440 kW

12-9-4-5-8-11-2-3-10-7-6-1  $0-15-60-75-120-135-180-195-240-255-300-315° <math>\pm 0.5°$  ( $\pm 0.75°$ )

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump6settings

Please note instructions on sheet 2.

Port closing at prestroke (2,45-2,65)

mm (from BDEY1. 12

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min '	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
1000	18,0	622-636	20 (30)	619-639	
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-133	
		}			
			1		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rate	speed		Medium r	ated spe	ed	Lower rat	Lower rated speed			e control
Control lever deflection degrees 1	mm min ' 2	Control- rod travel mm min 1 3	Control lever flection degrees 4	min '	Control- rod travel mm 6	Control lever de- flection degrees 7	min ¹ 8	Control- rod travel mm 9	min 10	Control- rod travel mm 11
-	-	-	-	•	-	-	-	-	-	-

Torque control travel a -

Speed regulation: At

1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gov	ad delivery vernor control lever bil temperature 40")	Control rod stop at speed	Fuel-de charact		Starting fuel delivery		
min ' 1	cm <sup>1</sup> /1000 strokes 2	min ' 3	min '	cm³/1000 strokes 5	min ' 6	cm³/1000 strokes 7	
Adju	st according to engine records-		-	•	-	-	

Checking values in brackets

9.84

L18

#### Note:

Control-rod travel "0" corresponds to 1.0 mm distance of the control-rod pot from the face-side stop plate.

WPP 001/4 MTU 31,7 h

1. Edition

En.

PE 8 ZWM 160/100 RS 2006 Komb.-Nr. 0 406 008 018

8-4-5-6-3-1-2-7 $0-45-90-135-180-225-270-315^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$  Replaces \_

Firm: MTU

Engine: 8 V 396-03

960 kW

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

2,5-2,6 ing at prestroke (2,45-2,65) mm (from BDG) Please note instructions on sheet 2.

Port closing a	it prestroke	(2.45-2.65)	mm (from BDG)v1	. 8	cions on sheet 2.
Rotational speed min	rod travel	Fuel delivery  Average value  cm³/1000 strokes	Difference in fuel delivery cm <sup>3</sup> /1000 strokes	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
<del> </del>	<del></del>		\ <u>'</u>	<del></del>	
1000	18,0	622-636	20 (30)	619-639	-
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-133	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated	speed		Medium ra	ated spe	ed	Lower rat	led spee	d	Torqu	ie control
Control lever deflection degrees 1	mm min 1 2	Control- rod travel min min ! 3	Control lever flection degrees	min ' 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min <sup>1</sup>	Control- rod travel mm 9	កាin ។ 10	Control- rod travel mm
•	-	•	-	-	-	-	-	-	•	-

Torque control travel a =

mm

Speed regulation: At

1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gov	ad delivery vernor control lever pil temperature 40")	Control rod stop at speed	Fuel-de charact		Starting fuel delivery		
min ' T	cm <sup>1</sup> /1000 strokes 2	min <sup>1</sup> 3	min ¹ 4	cm³/1000 strokes 5	min '	cm <sup>3</sup> /1000 strokes 7	
	st according to engine records-						

Checking values in brackets

9.84

BOSCH

#### Note:

Control-rod travel "0" corresponds to 1.0 mm distance of the control-rod pot from the face-side stop plate.

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 63,4 d

1. Edition

PE 8 ZWM 160/100 RS 2007 Komb.-No. 0 406 008 019

8- 1- 2- 4 - 5 - 6 - 3 - 7 0-45-90-135-180-225-270-315° ± 0,5° (± 0,75°) Replaces \_

Firm: MTU

Engine: 16 V 396-03 1920 kW

Please note instruc-

All less specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing a	at prestroke	2,5-2,6 (2,45-2,65)	mm (from BDCZy1. 8						
Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control				
speed	rod travel	Average value	in fuel delivery	Checking values	valve)				
min '	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes					
1	2	3	4	5					
1000	18,0	622-636	20 (30)	619-639					
1000	9,0	220-248	28 (42)	215-253					
300	9,0	104-128	16 (24)	99-133					
				1					
1		1	i		1				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min ' 2	Control- rod travet mm min <sup>1</sup> 3	(Antrol lever flection degrees 4	min ¹	Control- rod travel mm 6	Control lever de- ilection degrees 7	1	Control- rod travel mm 9	min 10	Control- rod travel mm 11
•	-	-	-	-	-	-	-	-	-	-

Torque control travel a =

mm.

Speed regulation: At

1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-de charact	livery eristics	Starting fue) delivery		
min '	cm <sup>3</sup> /1000 strokes 2	min ' 3	min 1 4	cm³/1000 strokes 5	min ' 6	cm <sup>3</sup> /1000 strokes 7	
	according to gine records-	-	-	-	-	-	

Checking values in brackets

9.84

**BOSCH** 

#### Note:

The fuel-injection pump has a special control rod for the partial cutoff of certain cylinders.

Control-rod travel "0" corresponds to 1.0 mm distance of the control-rod pot from the face-side stop plate.